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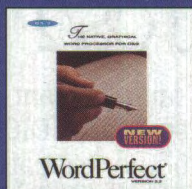
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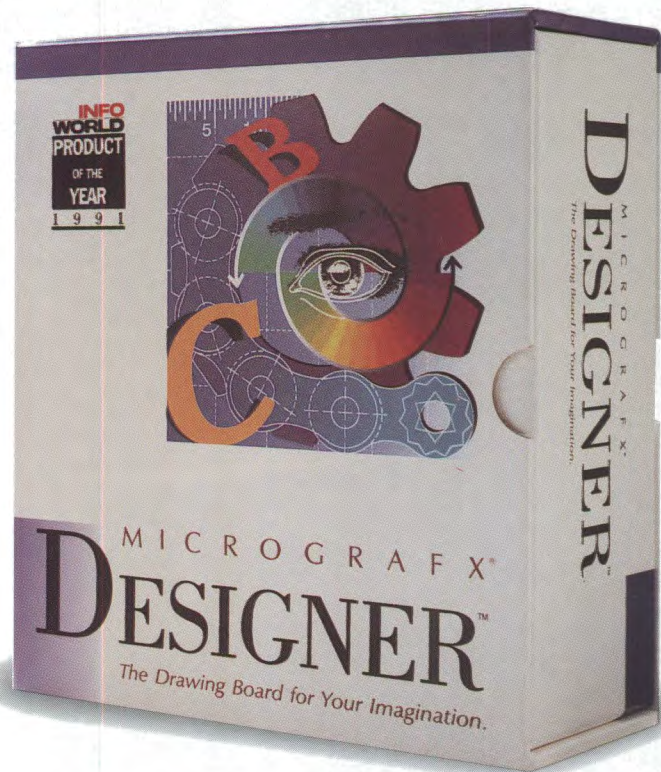
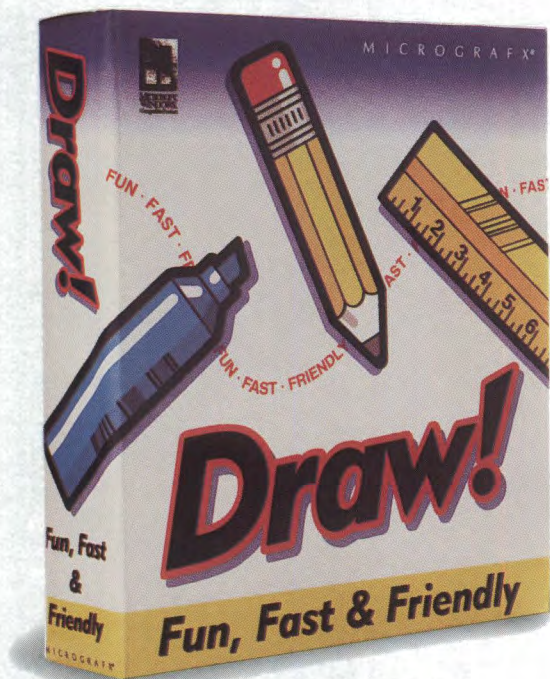
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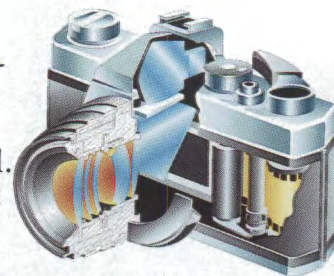


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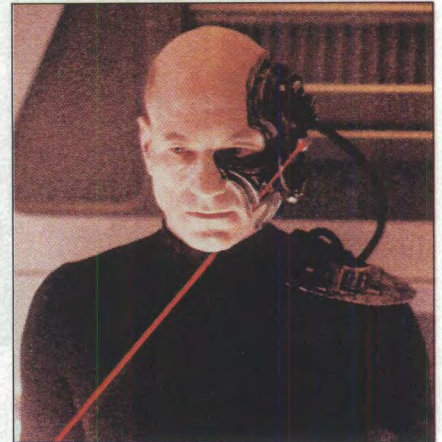
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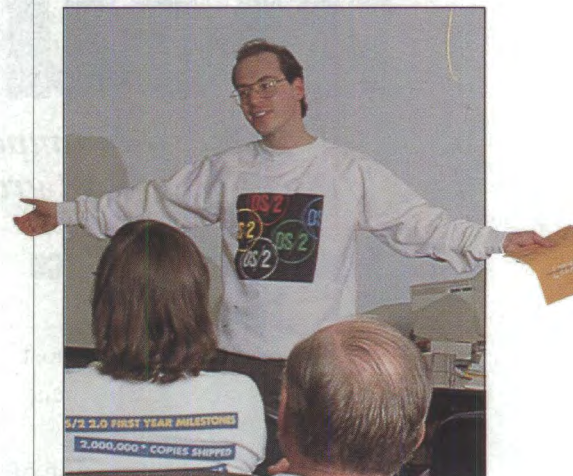
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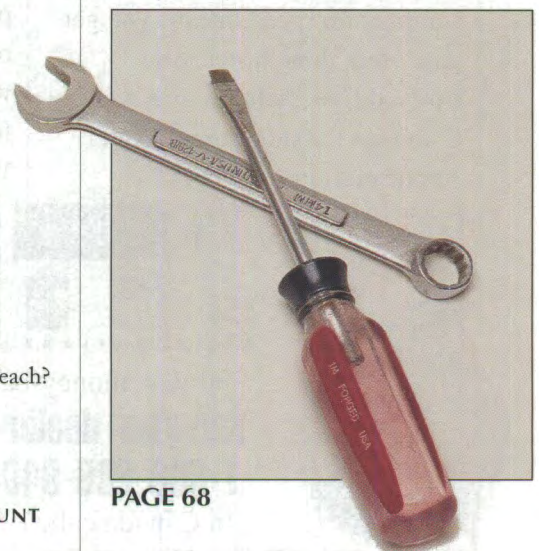
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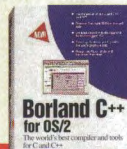
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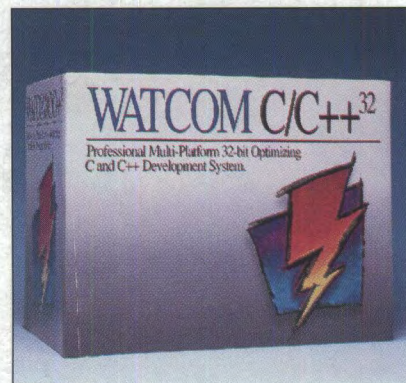
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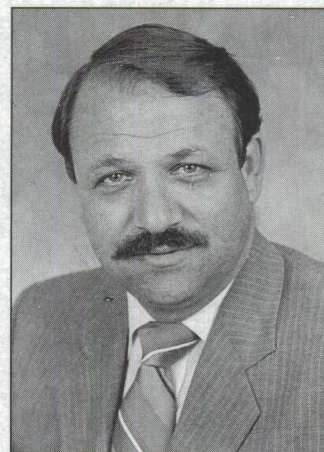


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# VISUAL PROGRAMMING for OS/2 Applications

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Dealing with IBM is like living in New York. You have to scream to be heard and then everyone thinks you're crazy. But now so many are screaming that even key insiders at IBM are beginning to wonder whether it's Big Blue that needs the lobotomy. It's a sad threshold that has been crossed when the staunchest defenders of OS/2 have begun bashing IBM rather than Microsoft. Yet it's happening.

These words are being written in the first week of May just as our issue is going to press. Every day for the past week, I have been receiving anxious distress calls from key software developers, user group leaders and prominent OS/2 advocates. Some are going bankrupt, some have fired their staffs, some have suspended further OS/2 development, all are fearful for the future of the operating system if IBM continues its do-nothing policy.

Despite what you will hear at Spring COMDEX where some hand-built shrink-wraps will be proffered, the release of 2.1 is still weeks away—sometime in June—from reaching retail channels and general availability. Mass proliferation of OS/2 to millions of average end-users seems nowhere in sight. And continued cultivation and retention of the existing installed base seems to be a distinct non-priority.

In fairness to IBM, a lot of the angst is simply pre-release jitters. Yes, the forward motion of OS/2 has been stalled—some say barely 20,000 copies sold during the preceding two months. But it's not realistic to expect anything but a severe slump in sales just prior to a major update.

Yes, 2.1 has been painfully delayed. But the fact that so powerful a system took a year to update is probably just a sign of prudence, not inability. OS/2 is hardly as easily updated as a simple word processor. OS/2 is a major operating system and successful revision takes time. Indeed, premature release brings its own basket of headaches. In that vein, key beta sites are even now working day and night to zap the last bugs. One such developer expects to be uploading last minute screen drivers until just days before Spring COMDEX.

Ironically, OS/2 complainers are concerned about more than just delays. They suggest that IBM and its independent representatives have now become arrogant. Perhaps IBM has become so immersed in digitizing, it sees its customers, associates and employees as mere ciphers to be manipulated. With organizational changes coming daily, no one knows who to turn to for answers. The operative response now seems to be: "That indecision is made at a higher level." Clearly, there is a certain smirking amidst the shrinkage as IBM officials eeny meeny miney moe on which promises they will keep and which they will dishonor. But it does no good to be user friendly, and insensitive to people.

The existing IBM mindset has created more than a bad attitude. It has manifested wrong thinking and inaction that has hurt the proliferation of OS/2. Three examples follow, **1. The Phantom of the Operating System, sometimes called the IBM independent software vendor "advertising program."** This program, originally designed to promote OS/2 applications in a host of publications, general and vertical, has been promised to launch every week since last December. Every week the Phantom is further delayed and revised. In consequence, numerous application developers have been forced to gear up—and then gear down—over and over again. Frustrated developers can't operate their busi-

nesses intelligently. End result: nothing. OS/2 and its developer community can't afford "nothing."

**2. The Windows Bashing Campaign.** From the image of James Cannavino skiing through a window pane to the harmful and misguided advertising campaign that struts "I don't do Windows Anymore," IBM arrogantly believed that OS/2 could out-sell Windows by alienating Windows users as uninformed idiots. This writer and *OS/2 Professional* were as guilty as any. And we were swept into the mindset.

But no more. Read Will Zachmann's column. Zachmann, myself, and many others have now realized that the performance advantages of 2.1 genuinely make OS/2 a better Windows than Windows. As such, the last gooeey hope for OS/2 is to convince 10 to 12 million Windows users that their future lies not with NT, but with OS/2. Indeed, the conflict is no longer between OS/2 and Windows but OS/2 and the high-ended NT. Remember the refrain: "Friends don't let friends use Windows." Dump that stupid catch phrase. From now on, it's "Friends encourage friends to use Windows—under OS/2."

**3. The abandonment of the installed base.** Some of those who operate at IBM's higher level are just now catching on that the Windows crowd is a pivotal target. But the defective logic accompanying this realization is that simultaneous engagement with the installed base is, as one advertising official phrased it, "Preaching to the converted." As such, current IBM policy is to bypass aggressive cross-selling of IBM products such as Communications Manager, LAN Manager or hardware to the installed base as not useful.

The same thinking infects promotional support for native 32-bit applications. Lack of support is precisely what inhibits the symbiotic growth of OS/2 apps and end-users. If apps can't proliferate, users won't multiply or even stay tuned. If there aren't enough users, the application orchard will remain stunted. IBM's solution to a chicken-egg problem is to cut off a breast and dare the animal to lay a golden egg.

Yet even the most disgruntled OS/2 dissenters cannot deny that the operating system in which they have invested their emotional and financial resources is indeed the most superior OS available. It is technologically far ahead of any rival. It is backwardly and downwardly more compatible than its nearest competitor. OS/2 therefore represents the best springboard mankind possesses today for a great leap forward into personal computer empowerment for tomorrow's masses.

The fruit of OS/2 plainly is too valuable to be allowed to wither. It is too important to the long-range recovery of IBM, too important to more than 2.3 million users, and too important to the future of computing. This thing is now bigger than IBM. The sooner the executives of Big Blue can get that principle through their skulls, the sooner arrogance and do-nothingness will yield to the so-called "new IBM" we keep hearing about: quick on its feet, fast to act, credible to its associates and customers.

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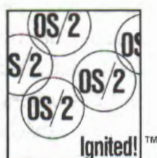
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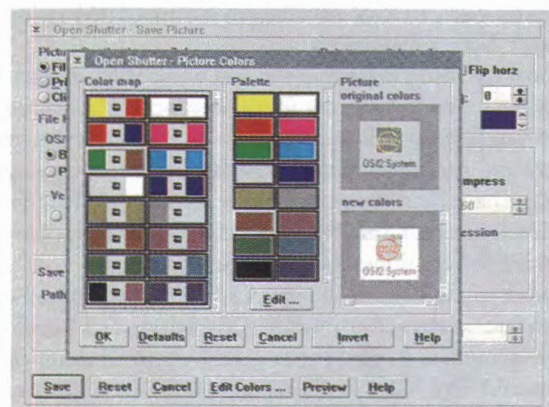


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To contact us by E-mail:

*OS/2 Professional*

MCI-Mail: 560-3615

Internet: os2pro@mcimail.com

Bradley D. Klierer:

MCI-Mail: 470-2447

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**Administrative, Editorial & Production Offices:** Edwin Black, Executive Editor & Publisher, Margaret M. Dutcher, Assistant Publisher, 6129 Executive Blvd., Rockville, MD 20852, Phone: (301) 770-3333 FAX: (301) 770-7062.

**Editor's Office:** Bradley D. Klierer, Editor, 5328 Chicago Ave., So., Minneapolis, MN 55417, Phone: (612) 823-2657, FAX: (612) 823-7945, MCI Mail: 470-2447.

**Advertising Sales—East Coast:** Richard B. Dubin, 33 Eton Drive, Slingerlands, NY 12159, Phone: (518) 489-4034, FAX: (518) 489-4045.

**Advertising Sales—West Coast:** Wes Klierer, 928 Country Glen Way, Anaheim, CA 92808, Phone: (714) 281-4045, FAX: (714) 281-4906.



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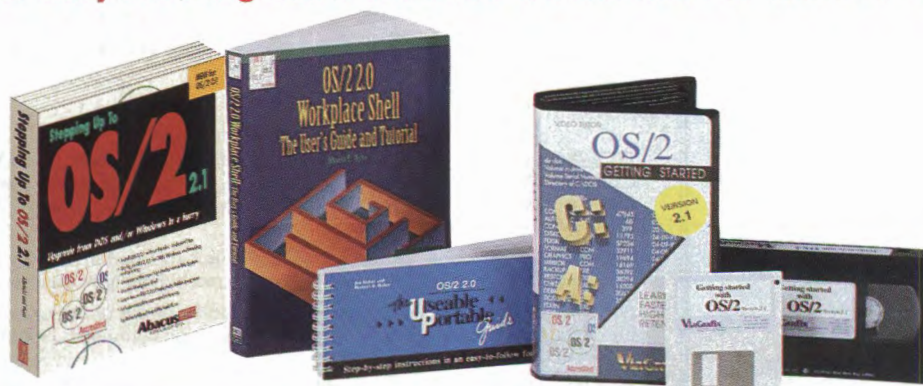
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*Comments, criticisms and observations*

### Thanks from the ranks

*OS/2 Professional* is the best magazine I've seen for OS/2. The writing is clear, friendly and straightforward. The columns by John Dvorak and William Zachmann are extremely well written, thought out and just plain fun to read. These guys are two of my favorite columnists on computer-related subjects. Don't you dare let them get away! I also was intrigued by some of the "industry gossip" mentioned. Why don't we hear any of this stuff in other magazines?

I chose OS/2 originally so that I could run my bulletin board system while still being able to make use of the machine for my own private needs. It didn't take long for me to "fall in love" with the multitasking, the easy switching between applications, the increased disk access speed, the virtual memory, the ease of use and many other advantages of OS/2. As a DOS user for nearly 10 years (a large percentage of my life), I figured that I would have a hard time adjusting to OS/2. NOT!

Now I can barely live with the limitations of using DOS at my job. My coworkers are all getting tired of hearing me praise OS/2 (especially since they've all heard that it is an unstable product). Personally I think it's envy!

Your position regarding Windows 3.1 and Windows NT is right on target. Windows 3.1 is a kludge pasted onto DOS. A very impressive kludge, but a kludge nonetheless. Windows NT is the very definition of vaporware. When it finally does appear, it will likely have to deal with being well behind OS/2 technologically. I see no reason to shortchange myself with an incomplete or nonexistent operating system when a fine, stable alternative is available. Why go halfway?

Again congratulations on producing such a fine magazine. I look forward to reading future issues.

*Herald Williams  
Metairie, LA*

Very nice magazine! I am lingering at work with Volume 1, Number 1 and I decided I want Volume 0, Number 0.

I recently bought a PC (first time!) for home—IBM PS/Value Point 433DX. It came with OS/2 pre-installed. But that was a conscious [act] on my part also. I work in an MVS/mainframe environment; but I want to learn OS/2 for both personal and professional reasons. Although this is a home unit, my ambition is to load up my hard drive and become a power user.

I have read many of your letters in Volume 1, Number 1 and I must say I feel the same positive vibes that I read about. I am a programmer (MVS/COBOL mostly) and I have caught some flak at work for going with OS/2. But I don't intend to program in MVS forever.

Thanks again!

*Patrick Hayes  
Chicago, IL*

### Stop the bashing

The extreme anti-Windows tone taken in your magazine so demeans a professional publication as to negate its value. The tone of both letters and editorial comments is better suited to angry school children than professionals. I note the same tone in letters written to other journals by OS/2 advocates. It would appear that the only way they can validate their interest in OS/2 is by denigrating Windows. The advocates may have their reasons, but for the uncommitted it is a significant negative. Some of my perceptions of OS/2 are affected negatively by its adherents.

The tone is even more unappealing in the editorial material. I can understand juvenile adherents, but not the staff of a professional magazine. I find your approach to be an insult to my intelligence. I am capable of making up my mind based on the merits of the

products and their suitability to my tasks. I do not need smarmy commentary.

I expect the justification is that Windows adherents started throwing rocks. While there may be some truth to that, nowhere have I seen the infantile level of comment on the part of Windows adherents that I have seen from the OS/2 partisans. The presence of Windows idiots is no reason to lower yourself. If you really believe in OS/2 start acting like adults.

*Ernest A. Fisch  
Phoenix, AZ*

### Customizing DOS

I enjoyed the 1,1 issue of your magazine very much....I wish you (and all of us) success with your magazine. I also wish IBM success with this super operating system.

One item particularly caught my attention: "Individually customized DOS sessions [January 1993 Special Report]. This is the second mention in two weeks that I've seen of a way to get individual AUTOEXEC files for each DOS VDM. It is clear that you can get individual files by using a VMB of a specific version of DOS. However, I can only conclude that you and the author of the other mention of such a facility must be using a different version of OS/2 than I am.

I can find no mention in any of the documentation (Command Reference, Red Books, TNT file, Help files and so forth) of such a capability. Nor can I get it to work as shown in your article. Any parameters that OS/2 is supposed to intercept in the parameter field must be preceded by a "%." The doc on that facility makes no mention of "/p/k" or of the ability to specify a BAT file name. I tried every variation on your suggestion that I could think of and none of them worked. Are you folks

*continued on page 19*



# THIS *or* THIS?

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# BYTES & PIECES

*News and trivialities, important and obscure*

## OS/2 dissidents hope for buyout

A number of independent vendors and leading OS/2 advocates are so worried about Big Blue's dismal marketing performance that they are now trying to actually buy OS/2 away from IBM. At least six leading software developers located from New York to California, and some outside venture capitalists, have come to the conclusion that IBM is incapable of making the development and marketing decisions needed to proliferate OS/2, especially to the masses of end users.

The growing group, led by Corner Store entrepreneur Paolo Pignatelli, includes principals at DeScribe and SourceLine, as well as Patrick Pearce, who recently appeared in a national OS/2 ad campaign, and Peter Norloff, who operates the OS/2 Shareware BBS. IBM's delay in 2.1, and rumors that shrink-wrapped sales at the end of April were down to 10,000 per month, have prompted those with great investments in the product to act if IBM will not. "If IBM continues in its present strategy," says Pignatelli, "OS/2 could face large obstacles."

Under the breakaway scenario envisioned by Pignatelli, a new company would be created in which IBM would retain a stake. This new firm—currently unnamed—would develop and aggressively mass market its own OS/2-based product, such as an "OS/2 Lite," and possibly another related extension product. The name OS/2

itself might even be replaced, Pignatelli asserts.

Pignatelli has already drawn up a multimillion dollar operating budget covering the next six months. Thus far, at least three investment bankers have expressed interest in the idea.

IBM officials are reportedly at least listening to the suitors' presentations. At press time, a meeting at IBM's Somers, New York, office has reportedly been set with John Patrick. Wally Casey, director of marketing for Personal Software Products, was quoted in *PC Week* as saying, "We'll look at their business plan, and do whatever it takes to be successful."

In an interview with *OS/2 Professional*, Casey denied the independent initiative was anything but an expression of confidence in IBM and OS/2. "It makes an outstanding statement about OS/2," asserted Casey, "that individuals are actively trying to increase the penetration and acceptance of OS/2 across the country. It impresses me that there is such a grassroots movement out there."

He added, "But in all the discussions I've had, no one has said they have come forward because of a failure of marketing, but rather to increase the marketing. They think there is such a demand out there that alternative means of distribution are possible." Casey insisted that IBM has always had a strategy for selling to all market segments, including the typical end-user.

"I don't think anyone within IBM can possibly admit that a

good job has been done marketing OS/2," counters Bill Mueller, president of SourceLine Software, a leading tools developer, and a member of the dissident group. One California-based software developer bemoaned, "My life is invested in OS/2. It's too late for me to change. If IBM can't do the job, perhaps we can."

*Edwin Black*

## OS/2 vs. Windows exposure

Which product has the most press exposure, OS/2 or Windows? It's no contest. Just examine the January CD-ROM from *Computer Select*, which incorporates 77,584 documents from almost every computer publication in existence—even newsletters. Search the keywords *Windows* and *OS/2*. The most amazing numbers arise.

Out of 77,584 articles published during the past year, 20,972 articles mentioned Windows one or more times. In other words, more than 25 percent of all articles written about computers and software included a mention of Windows. Compare this to only 5,382 mentions for OS/2—barely a quarter of the Windows exposure. Ironically, there were 13,851 mentions of DOS, and even 8,818 mentions of UNIX.

Clearly, the attention paid Microsoft is frightening. People blame advertiser pressure, and other factors, but I can say from experience this is not the case. The only possible reason for these lopsided numbers is the respective publicity arms

of IBM and Microsoft. IBM needs effective public relations, while Microsoft already has it—and wields it. Microsoft's in-house flack, Marty Taucher, is among the most responsive publicists I've encountered. And outside counsel, Waggener-Edstrom, is so effective, it should be brought to the Harvard Business School as a case study. Maybe IBM should follow Microsoft's lead.

*John C. Dvorak*

## Ten pages for Gerstner

As OS/2 strategists relocate from their pastoral environs in Somers, New York, to Austin, Texas, top managers are scrambling to complete a 10 page executive summary of OS/2 for IBM's newly installed CEO Louis Gerstner, according to company sources familiar with the project. Reacting to Gerstner's style, which eschews visual dog-and-pony shows to hard facts on paper, OS/2 officials Lee Reiswig, John Patrick and Wally Casey have been hard at work on the document.

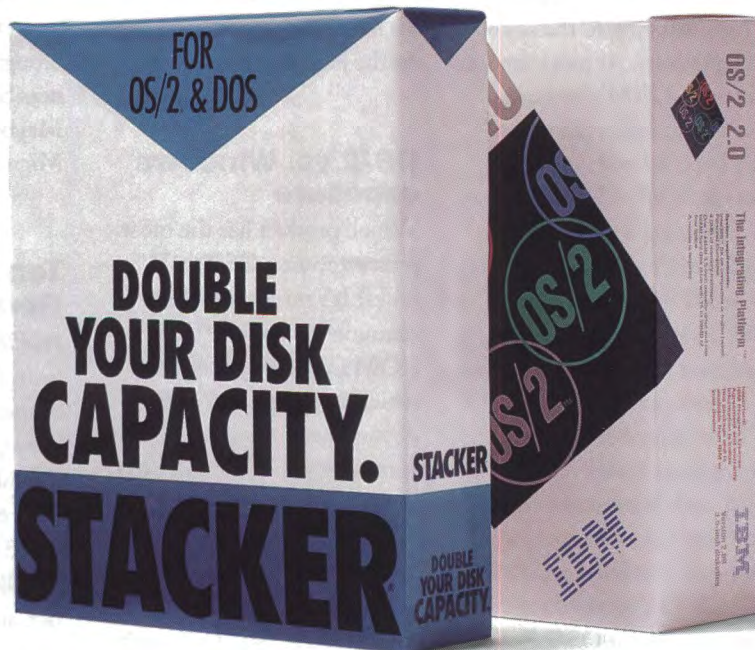
At press time in late April, the document is still in draft, but its authors hope to demonstrate why OS/2 is worth the extraordinary losses IBM has taken. In the lame duck days of John Akers, there was an air of spending non-accountability. The new Gerstner regime has inspired cross-examination of budgets, cost justifications and no-fooling-around common sense.

*Edwin Black*



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# A Gateless World

BY JOHN C. DVORAK

One day I was visiting John Markoff at *The New York Times* and he told me about the time Bill Gates came to his office and looked over the big Macintosh he uses. He watched Gates examine the machine for a few minutes and saw him get noticeably irritated. "He couldn't find any Microsoft software on the machine. I don't use any," said Markoff, chuckling to himself.

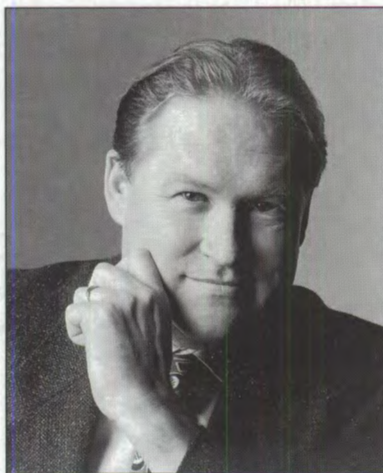
I've always remembered this anecdote and recently wondered what the world would be like if Microsoft suddenly disappeared without a trace and the world continued as if the company never existed in the first place.

It dawned on me that hardly anything would be different. This is particularly true on the Macintosh where Microsoft mostly sells Excel and its me-too word processor Microsoft Word. Few would argue that Word is the best word processor for the Mac. It isn't. It would NEVER be missed if it never existed. On the other hand Excel might be the best spreadsheet for the Mac, but it's not irreplaceable. Life would go on easily without Excel. Microsoft brings very little else to Apple's party. In fact Microsoft Windows has probably done more to harm Apple and the Mac than all its Mac support has helped.

Even in the PC world you have to wonder what things would be like without Microsoft. The Graphical User Interface (GUI) might not have been as well developed as it is now that Windows has taken off. It's possible that this is Microsoft's sole contribution to the world of computing. Then again, Windows was a reaction to something called VisiON which was a quasi-GUI/windowing environment first shown in the early 1980s. And for those who like the GUI on the PC there is always OS/2 or Motif which is much prettier. When you combine Microsoft's meek contributions with the negative aspect of the company, namely its buying

up of small creative development shops all over the place, you have to ask yourself if indeed the computer scene is now being hampered by Microsoft and its one-man vision.

I think we can effortlessly conclude that the world would not be worse off if Microsoft had never existed. Let's look at some things we wouldn't miss.



**1. BATTLES.** We wouldn't miss the battle between Microsoft and IBM, and the constant bickering between the old-timers and bureaucrats at IBM and the low-level, know-it-all kids at Microsoft. To fully appreciate this dichotomy go rent the British version of the *Max Headroom* movie. It's a full-length feature with a few different characters not found in the American series. Besides being a terrific film, the nerdy computer whiz in the British movie is the epitome of a Microsoft kid. Meanwhile the network owner is like an old-time IBMer. While funny in the film, their respective presence

in real life we can do without.

**2. ATTENTION.** We wouldn't miss Windows and all the attention it gets at the expense of OS/2. Enough said about that.

**3. PAP.** We wouldn't miss Bill's Information-at-Your-Fingertips notion. How boring. As an aside I should mention that Fred Gibbons of *Software Publishing* was telling me one day that Microsoft is so derivative that almost everything they do is a copy of someone else's idea. Windows stemmed from VisiON and the Mac. The term "NT" stems from the 386 NT, the name originally rumored for the PS/2 when announced in 1987. I could go on and on with this stuff. So Fred asks me, "Do you know where Gates got the term 'Information at Your Fingertips'? He got it from me! I created the term and mentioned it to him in a conversation. Next thing I know he's using it!"

**4. CRAP.** We wouldn't miss the offbeat Microsoft *de facto* stand-



## DVORAK'S VIEW

ards such as the WORD formatted document. There's a standard that should be tarred and feathered. Nowadays nearly every publisher requires Word files. Few know what the term ASCII even means.

**5. PROMOTION.** We wouldn't miss the pre-announcement hype surrounding nearly all Microsoft products. They talk about things such as Chicago, Cairo, Win NT 4.0 and the like as though they were actually shipped. Things that haven't even been trial coded are nearly announced products. All these products have incredibly grandiose specifications that can never possibly be met.

**6. OH, PUL-LEEEZE!** We wouldn't miss the poor-boy act put on by Microsoft. Bill Gates flies coach. His new bride intends to keep working even though she's married to a billionaire. Gads, why? I'm reminded of the hicks in California who win the lottery. "Gosh, Jeb and I will put this 10 million dollars to good use, but we're going to keep working on the pig farm as hog sloppers. No reason to quit just because we're now rich. We're plain ordinary

folk." Give me a break. Why do these boneheads even play the lottery if they aren't going to change their lives? I thought THAT was the idea in the first place! So Gates is going to work his 16-hour days and so will his lovely wife. Get off it. School's out. The bell rang. Check the wallet.

Then again if there wasn't a Microsoft there might still be a John Akers-managed IBM, which is something that was going nowhere fast. So perhaps Microsoft did have a reason to exist after all. The reason is now null and void. ♦

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*John C. Dvorak is a computer columnist for the San Francisco Examiner, PC Magazine, PC Computing, Microtimes and MacUser.*

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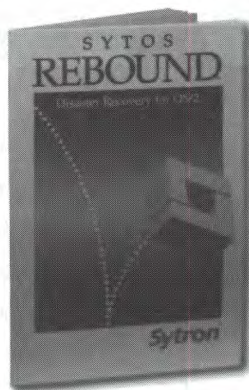
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## INPUT

*continued from page 13*

running a 2.1 beta system? Any additional help on this would be appreciated.

I'm looking forward to your next issue.

**Leland C. Sheppard**  
Placerville, CA

[Editor Brad Klierer answers: The /P and /K parameters of COMMAND.COM are actually a feature of DOS, not OS/2 (and hence will work with OS/2 2.0). You can find the documentation of these parameters under the COMMAND entry of the OS/2 online documentation (Command Reference). The /P parameter tells COMMAND.COM to remain resident in memory after running. The /K parameter passes the name of a command

that COMMAND.COM should execute. If this command is the name of a batch file, the batch file will run and any settings therein (such as the path) will remain resident until you exit.

As an example, I currently run two versions of Borland Paradox on my system: Paradox 3.5 and Paradox 4.0. Paradox 3.5 is the default, so Paradox 4.0 requires a special path. I modified the path in AUTOEXEC.BAT and named the new batch file AEPDOX4.BAT. To use this file, I set up a DOS session and opened the settings page (right click on the DOS icon, and left click on the arrow next to Open). In the Path and Filename field I entered: C:\OS2\MDOS\COMMAND.COM which tells the session to run the command processor (COMMAND.COM). Then, in the Parameters field, I typed: /p /k aepdpx4.bat

The command processor loads, remains permanent and runs my modified batch file. Voila! A new, custom environment for the DOS session.]

### Connected at home

In the "Home but Not Alone" article [January 1993 User Profile], Shaun L. Brown is quoted as saying that OS/2 doesn't allow her to communicate with the big host system housed in San Jose. "I can't use Communications Manager to call in to the host." She wishes that OS/2 "could also make the modem connection because then I could use all the features of Communications Manager..."

OS/2 Communications Manager can indeed make the type of connection that Shaun requires by configuring an

*continued on page 23*

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# OS/2 Should Open the Window

BY WILLIAM F. ZACHMANN

Some of OS/2's more wild-eyed enthusiasts persistently view Microsoft's Windows as "the enemy." They see it as an OS/2 vs. Windows battle in the market place. They delight in pointing out what they consider to be Windows' limitations and flaws. They cast themselves as the champions of OS/2 in an "us vs. them" battle against Windows.

They do not do OS/2 any favors in the process. On the contrary, they thereby define the situation in a manner least favorable to OS/2 and most favorable to Microsoft's "Windows, Windows, Windows" strategy. They are, in fact, trying to play the game by Microsoft's ground rules.

The primary reason, simply put, is Windows' undeniable success. True, Windows is not nearly as successful as Microsoft would like everyone to believe. The real number of active Windows users is certainly well below the 25 million licenses Microsoft recently claimed to have sold. My current estimate is that the number of active Windows users is probably now in the ballpark of 8 to 10 million. That is slightly less than 10 percent of the active installed base of IBM and compatible systems based on the Intel x86 architecture.

Nonetheless, even 8 to 10 million people using Windows at least part time is still a tremendous success for Windows. What's more, Windows unquestionably has substantial positive momentum in the market place. A very high proportion of new systems sold ship with Windows pre-installed. Furthermore, Windows application sales have risen sharply over the past two years. One would have to be deaf, dumb and blind not to recognize that Windows has done very well and continues to do well.

The criticisms some OS/2 fans lodge against Windows 3.1 notwithstanding, there is no denying that a large and growing number of people happily use Windows without serious problems and will continue to do so until they have a better alternative. And the momentum for Windows application development is

presently much greater than for OS/2 development. It would be foolish to claim otherwise.

It would be equally foolish to expect, therefore, that OS/2 can be made more successful by telling the large and growing number of Windows users that they have made some sort of terrible mistake by using Windows. That just isn't going to work.

OS/2's best opportunity is not to oppose Windows or to try to convince Windows users they've gone down the wrong road. Instead, it is to persuade them that OS/2 offers a better way to take the next step down that road than the alternatives offered by

Microsoft. It makes far more sense for OS/2's supporters, in a judo-like maneuver, to use the energy of Windows' momentum on behalf of OS/2 than for them to waste even more energy opposing Windows.

IBM's decision to support Windows on OS/2 2.0, though much criticized by some of OS/2's fans for causing what they saw as an unnecessary delay in the release of 2.0, is now one of OS/2's greatest assets. True, OS/2 2.0 did not deliver on the promise IBM made in April 1991 that OS/2 would provide a "Better Windows than Windows," even though it did provide a "Better DOS than DOS." With

OS/2 2.1, however, IBM appears to have a product that finally delivers on both promises made more than two years ago.

At the same time, Microsoft is not presently able to provide either a "Better DOS than DOS" or a "Better Windows than Windows" with Windows NT—either absolutely or relative to OS/2 2.1. Even if NT were completely finished (it isn't) and had backward compatibility for 16-bit DOS and Windows applications as good as that of OS/2 2.1 (it doesn't), its resource requirements are significantly greater than those of OS/2 2.1 and certainly beyond what all but a very small number of users have presently got.

That's why Microsoft is so hard at work developing more efficient, Intel-specific support for the WIN32 API in the form of





## ZACHMANN'S VIEW

"Chicago," "Windows 4.0," "DOS 7.0," "WIN32 for DOS" or whatever else one wants to call it. (I've long referred to it as "NT Lite.") NT Lite won't be ready, however, until (at best) sometime in 1994.

IBM's most successful marketing strategy for OS/2 2.1 is not, therefore, to position it in a zero-sum game against Windows but, rather, as the most logical step beyond Windows. All sorts of marketing possibilities come readily to mind.

IBM can woo Windows users by inviting them to "come home" to OS/2 and promote OS/2 2.1 as the best upgrade path for Windows 3.1 users ready to "graduate" to a more capable environment. Users could be told, "You can have it all!" by taking advantage of OS/2 2.1's remarkable ability to run DOS, Windows and OS/2 applications—and run them well. Additionally, IBM can point out that OS/2 2.1 delivers what Microsoft still only promises with "Chicago."

OS/2 has capabilities that are very important to those who are responsible for building "industrial strength" application systems in whole or in part on a platform of low-cost microprocessor-based systems. It is already doing well in that arena.

If OS/2 is to achieve its greatest potential, however, it must also prove itself an attractive environment for millions of people who primarily use personal computers as individual productivity tools, whether in the office, at home or in the schools. They will not be won over by an approach that seeks to persuade them that they were idiots to find Windows an improvement over the DOS C:> prompt.

Quite to the contrary, OS/2's best chance for broad acceptance is to reach out to millions of DOS users and millions of Windows users. IBM must persuade them that OS/2 2.1 is the best way to continue to enjoy the benefits of the DOS and Windows applications they already have while gaining the benefits of a more robust 32-bit operating environment. If that is not accomplished, much of OS/2's greatest potential will never be realized. OS/2 enthusiasts tempted simply to disparage Windows ought to bear that in mind. ♦

*Contributing writer William F. Zachmann, formerly a columnist with PC Magazine, PC World, PC Week, Computer World, and Info World, is now the host of the Canopus Research Forum on CompuServe (GOcis:Canopus).*

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Circle #58



## INPUT

*continued from page 19*

SDLC 3720 session for connectivity to the host system, rather than the asynchronous connection that INPCS-HPO makes. This connectivity requires the use of a synchronous modem (such as the IBM 7855 modem or equivalent).

In fact, when I contacted Shaun she indicated that she had an IBM 7855 modem, but did not know how to configure OS/2 Communications Manager to use it! So we worked through it and Shaun now has the connectivity she desires.

*William G. King Jr.  
Tampa, FL*

### Sytron responds

In the March/April issue of *OS/2 Professional*, regarding your review of Sytos Plus for OS/2, I was the "technical support representative at

Sytron" who suggested that the Service Pak might improve performance of the Tecmar QT-525es on the 486 clone. We have since discovered, with the help of Tecmar, that older versions of firmware in the tape drive have been responsible for the slow performance that you experienced. You probably had firmware version 70x. We discovered firmware versions 73a and higher will improve performance dramatically. If you were to use the OS2ASPL.DMD instead of the OS2SCSI.DMD, you would use a different .SYS file for the Tecmar drive, and thus the problem would not occur.

In reference to your review of the CMS Jumbo 250 in the same issue, we are writing a new driver for the Colorado Jumbo tape drive.

*Kevin Bedard  
Sytron Technical Support  
Westboro, MA*

### Kudos, plaudits

I was very pleased to encounter a copy of your magazine for January 1993 in my mail today. I found "Volume 1, Number 1" to be interesting and helpful. No doubt your magazine will help users gain even more from a promising operating system and, I expect, help persuade others to give OS/2 a try.

I note that "Number 1" was not your premier issue. Is there any way to get a copy of last fall's inaugural issue? If not, would someone please take a moment and mail me a copy of Edwin Black's Special Report, "The Future of OS/2." ♦

*Ronald K. Esplin  
Provo, UT*

*[Editor's note: copies of Zero Zero can be obtained for \$7 as long as supplies last.]*

### Do these quotes sound familiar?

"It doesn't crash in the debugger!"

"I can't reproduce it!"

"Why does WinDefWindowProc generate an error?"

"Exactly, what did you do?"

"Where should I put WinGetLastError?"

"It must be a configuration problem!"

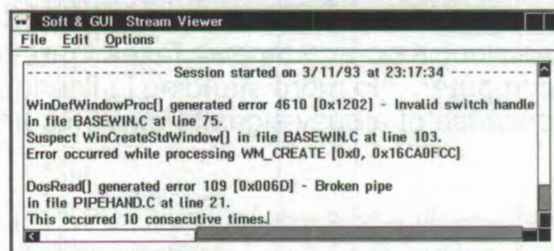
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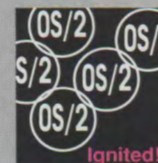
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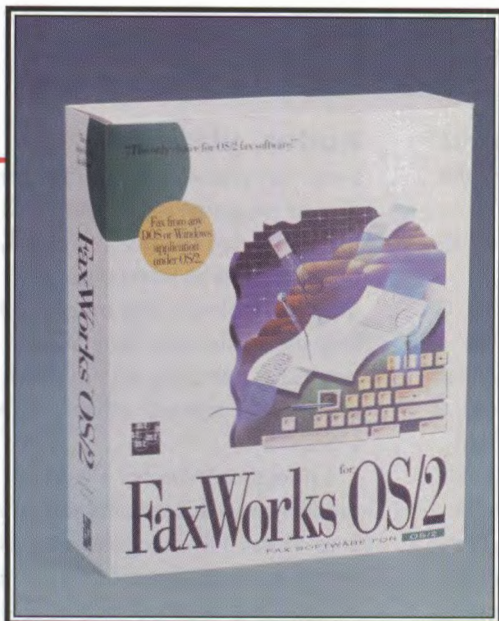


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# US/TOO

Gossip and Chip Talk

**R**ICH RETURNS TO IBM. IBM has drafted **WILLIAM K. RICH** out of retirement to take charge of marketing for all Personal Software Products (PSP). Rich, who is well regarded by many at IBM, was named general manager of worldwide sales and marketing. He comes in under PSP president **LEE REISWIG** as the new number two in the organization, above the existing vice president of sales and marketing, **JOHN PATRICK**.

Rich has a stellar trail of credentials, including two vice presidencies. He has served also in the key position of secretary to the IBM Board of Directors. He was most recently an IBM consultant. Rich will operate out of the Boca Raton office, coordinating sales in the U.S., Europe and the Middle East.

One PSP marketing source said that Rich would not stand for indecision in advertising and marketing and was so well connected throughout the company that his phone number might just as well be 1-800-GOD.

**P**AOLO PIGNATELLI POIGNANT. The hottest new name in OS/2 is **PAOLO PIGNATELLI** who has organized the dissident movement of OS/2 advocates and developers. The movement is trying to buy out OS/2 or at least form a new company to market it. Pignatelli gained fame as the man behind the Corner Store, the first all OS/2 retail source in the nation. Proof that Pignatelli's efforts are respected can be seen in the fact that senior IBM officials are carefully listening to his proposals.

**G**ERSTNER DOESN'T NEED ADVICE. Although asked repeatedly by CNBC's **NEIL CAVUTO**, "Were you asked to be CEO of IBM?" Microsoft CEO **BILL GATES** refused to answer the question. He just can't admit that IBM really didn't want him to be their CEO. Cavuto asked Gates what advice he would give IBM's new CEO, and he was full of (useful?) advice for IBM. IBM's new CEO **LOUIS GERSTNER** reportedly said, "I don't want to keep reading Billy Gates' advice on how to run IBM."

By the way, for all those columnists publishing "Open letters to Lou" about repairing the damage at IBM, sources close to Gerstner say he does receive a regular clipping report, and such articles are included.

**M**ICROGRAFX & OS/2. *PC Week* recently published an article saying Micrografx was not behind OS/2. On the contrary, **J. PAUL GRAYSON**, Micrografx CEO, says the company has more people working on OS/2 than ever before. Grayson says Mirrors is doing very well, and they are evaluating new directions for OS/2 products. Among Micrografx's OS/2 offerings are Designer and Windows Draw. Grayson also reportedly attempted to get the *PC Week* article corrected prior to publication, but was unsuccessful.

**B**ON VOYAGE, CONKLIN. One of the best-loved editors in the OS/2 family, **DICK CONKLIN**, is about to retire as editor of *OS/2 Developer*. Conklin's decision comes as his inhouse quarterly is being sold to Miller-Freeman, which has been the contract publisher for some time. Conklin will retire, but expect him to keep his word processor hot.

**L**INTAS REVIEWED. Among the many changes at IBM may be a change in advertising agencies. For years, **LINTAS:NEW YORK** and its affiliates have had the lock on nearly all advertising. But key IBM officials from New York to California have been asking for a change. Among those ready to step in are **WELLS, RICH, GREEN** in New York and **WINSTON ADVERTISING** in Santa Clara, California. Wells, Rich, Green made a reputation for themselves with some of America's best-loved ad campaigns, including those for Alka-Seltzer and Volkswagen. Winston Advertising is located in the heart of Silicon Valley and specializes in hi-tech accounts.

Both agencies have already made inroads into peripheral IBM business and are waiting in the wings should a shake-up occur.

**W**HITTLED BACK. After floating around without a business card, "Mr. OS/2," **DAVE WHITTLE**, seems to have found a new home in Austin. Whittle was told that he was needed on the reorganized OS/2 marketing team and, whatever he was doing, he should just keep doing it in Austin. The outspoken Whittle is now off to Russia to explore the product proliferation of OS/2 in the former Soviet Union. ♦







THE BORG IS COMING...THE BORG IS COMING...THE BORG IS COMING

# THE BORG ARRIVES

## OS/2 2.1—YES!

The Borg will be irresistible—even if a bit late. Here's an exclusive preview of what's in store—even before it hits the stores.

BY HERB TYSON

**O**S/2 2.1, the first full revision of the 32-bit operating system that debuted one year ago last month, is undergoing final fit and finish for its imminent release. At press time in late April, *OS/2 Professional* has learned the shrink-wrapped boxes will ship within weeks, possibly as soon as May 24 as a Spring COMDEX coup. A teaser advertising program is scheduled to begin the week before.

The new version—code named BORG (referring to the all-powerful entity on *Star Trek: The Next Generation*)—brings dramatic improvements in many performance areas, along with new features and capabilities. With improvements in speed, stability and reduced memory requirements, OS/2 2.1 is poised to make believers out of a lot of skeptics. This is the OS/2 its advocates and evangelists have been hoping for. Does OS/2.1, as the joke goes, really mean *curtains for Windows*? Only time will tell. At the very least, OS/2 2.1 is going to garner a lot of new respect for IBM as a desktop platform developer.

First, the bad news. OS/2 2.1, previously expected for completion around the end of March 1993, was delayed for another round of public beta testing. The March beta was met by perhaps the most mixed reaction in the history of personal computing. Some users were overwhelmingly enthusiastic about it. One CompuServe tester proclaimed "Just put it in a box and ship it. It's perfect!" Others, stung by mysterious bugs in a new .INI file format and in the multimedia extensions, actually demanded that the beta be withdrawn.

Fortunately, neither extreme won. A few quick sprays of insecticide and IBM seemed to have most of the infestation well under control by mid-April. With the initial problems now behind them, beta users are discovering that dozens upon dozens of long-

standing glitches have vanished. Indeed, key OS/2 sources at IBM told *OS/2 Professional* that more than 200 bugs needed fixing before 2.1 was ready for prime time. "It's too important," said one IBM official. "We're not going to release it until it's right." IBM reportedly sees this next release as its best opportunity to derail the Windows express.

And, that's the good news. Even in beta form, this version of OS/2 could very well stop Windows in its tracks. From improved stability, to dramatically improved Windows support, to the new Multimedia extensions—OS/2 2.1 delivers. OS/2 really *is* at last living up to its promise to be the integrating platform, adding *does* and *can* in a number of new areas as well.

### Impressions

As I'm writing this, I'm enjoying the trilling of at least three violins rendering the "Minuetto Allegretto" from Mozart's "Eine Kleine Nachtmusik." That's not unusual. However, I'm listening through headphones attached to the same Toshiba 3401 CD-ROM drive that I used to install the OS/2 2.1 beta. As the strings serenade, I'm also downloading a file from a BBS and formatting a floppy disk—all at the same time. Yes, Virginia, you can play audio CDs on your computer under OS/2—video disks and digital audio, too, if you have the equipment. And—downloading and formatting notwithstanding—the music never skipped a beat!

OS/2 2.1, even in beta, is considerably stronger than the OS/2 2.0 that IBM released just a year ago. While it consumes more disk space—owing largely to the inclusion of the Windows 3.1 Accessories and MMPM/2—it's a little leaner in the RAM department. On my 486-33 with 16MB of memory, OS/2 2.0 left about 7.5 megabytes of RAM free just after booting up. With



## SPECIAL REPORT

2.1, I seem to start with just over 8 megabytes—a net improvement of about a half megabyte of RAM. While that's not a quantum leap by any standards, it's certainly better than the same step in the opposite direction. OS/2 2.1 also seems dramatically more stable. Except for known bugs, crashes are infrequent, and unexplained crashes are almost nonexistent. As *OS/2 Professional* was going to press, even Ernest and Julio Gallo are saying "It's time!"

### OS/2 2.0—not quite there

OS/2 2.0 suffered from a number of congenital defects that sent many an unwary user into near-cardiac arrest. The most pernicious problem was probably the notorious "CPS: Extents not found" crash due to a bug in the High Performance File System (HPFS). This monstrous error confronted you with an "Invalid media" error message when you rebooted and tried to access your hard disk. The problem is now cured—fixed by installing a replacement for UHPFS.DLL and running CHKDSK /F.

Another problem area with OS/2 2's first release was the clipboard. Using the clipboard from the View program caused a system hang. Worse, though, was the sluggishness and system hangs when trying to use the clipboard from within Windows programs. The technical support advice: turn off public clipboards when using Windows programs. That wasn't exactly the "integrating" platform users wanted.

The loudest complaints focused on the relative performance of Win-OS/2 3.0—the modified version of Windows 3.0 that was included with OS/2 2.0. With masterful timing, Microsoft released the new Windows 3.1 at the same time OS/2 2.0 rolled out. The comparison was stark. While Win-OS/2 3.0 was actually faster and more stable than Windows 3.0 itself, it was a dog compared to Windows 3.1. Even though IBM demonstrated Win-OS/2 3.1 on April 7, 1992, one day after the release of Windows 3.1, users were still waiting 13 months later. Missing the point, IBM repeatedly pointed out that very few applications required version 3.1 of Windows. The point, however, was that Windows 3.1 is so much faster than 3.0 that it makes the latter seem worthless by comparison. The lack of speed in Win-OS/2 3.0 left many potential OS/2 converts with Missouri-like "show me" expressions on their faces. Better Windows than Windows it was not.

### Round 2.1

Enter OS/2 2.1—and it's a whole new game. Almost all of the major complaints have been resolved. Moreover, there's now a certain snap to the way OS/2 2.1 works. It's kind of like the high-

quality sound you get when you slam the door on a Mercedes. Something in the feel tells you that it is solid, rugged and dependable.

Shortly after the release of OS/2 2.0, IBM began an ad campaign featuring a crash helmet and the words "You won't need one of these with OS/2." Many OS/2 2.0 users cringed at that ad, because it just wasn't true. It had the potential for being true, but the promise was unfulfilled. With OS/2 2.1, you no longer feel apologetic or embarrassed when you see the crash helmet ads. There's now actually quite a bit of truth in the image.

The task remaining for IBM now is to get OS/2 2.1 into the retail channels. The most recent delay was forgivable, however, for at least two reasons. One reason is fairness. Consider, for example, that it took over two long years for Windows to go from 3.0 to its first major overhaul. Even then, despite the clever repackaging of UAEs (Unrecoverable Application Errors) as GPFs (General Protection Faults), where one Windows application corrupts the memory space of another, Windows 3.1's fine print still advises you to reboot after a protection violation.

The other reason is that OS/2 2.1 is worth waiting for. Until 2.1, many users had reservations about recommending OS/2 to other users. Sure, they were willing to rave about its virtues. But they stopped short of actually recommending it, except to associates they knew would welcome its technical accomplishments while forgiving its blemishes. They won't hesitate this time!

### What's better?

The best "better" about OS/2 2.1 is its stability. The seemingly random crashes that left early users of 2.0 scratching their heads are history. In addition to curing dandruff, OS/2 2.1 beta gives solid and reliable performance (provided you avoid the known beta pitfalls). Using OS/2 2.1, you actually get to use **Shutdown** more often than the three-fingered salute (Ctrl+Alt+Delete).

### Better Windows than Windows? You bet!

In talking about what's better about OS/2 2.1, it's impossible to get away from comparisons with Windows 3.1. Most impressive in OS/2 2.1's new feel is the solid and zippy performance of Win-OS/2 3.1. Like many DOS programs when running under OS/2, the modified version of Windows 3.1 runs faster under OS/2 than under DOS 5.0. On my 386-25 clone, with 8MB of RAM, the quickest loading time for Word for Windows I can record is 31 seconds when starting straight from DOS (by typing WIN WINWORD from the DOS command line). Under OS/2, WinWord loaded in 26 seconds. From the Program Manager under DOS,



## SPECIAL REPORT

WinWord loaded in 12 seconds. From the Program Manager under OS/2, WinWord loaded in just under nine seconds. When I moved WinWord to an HPFS partition, by the way, I shaved another three seconds off the loading time. The loading time differences are certainly not “make or break” for OS/2. However, the extra zip is noticeable throughout Win-OS/2.

Another major improvement is in the use of “seamless” Windows. Seamless means running Win-OS/2 on the desktop, side-by-side with OS/2 and windowed DOS applications. Under OS/2 2.0, seamless *seemed* like *less*: Less performance, less speed and less stability. Under 2.1, seamless is a real pleasure. The speed and smoothness are on a par with Win-OS/2 performance running full screen. The *shared-session* feature also works now. Under this arrangement, if a Windows program is already running, you can piggy-back additional Windows programs onto the same copy of Win-OS/2. The result is much faster startup times, as well as lower memory consumption. Of course, you give up OS/2’s inter-session crash protection, but for most well-behaved Windows programs, it’s a risk worth taking.

Under OS/2 2.0, Win-OS/2 clipboard handling was pretty dreadful. It was unreliable, slow and crash prone. Seamless had become unseemly. In OS/2 2.1, however, clipboard operations are flawless. IBM put the clipboard through a major overhaul. Another irritation of OS/2 2.0 was that a DDE (Dynamic Data Exchange) “agent” and the clipboard were explicitly started each time you opened Win-OS/2. Users will be happy to know that this behavior is history. The DDE agent is obsolete—color it *gone*! The clipboard, no longer a necessary crutch, is now a tool you use only when you need it.

### Better installation!

Also much improved is the main installation. As shown in Figure 1, the main Install screen now includes options for serial devices (communications ports), CD-ROM drives, SCSI adapters and printers. OS/2’s installation almost always guesses correctly about the devices attached to your system. That being the case, this screen will be most useful for users who *change* their

hardware after installation. For them, the job is now easier.

When installing from diskettes, gone is the lame selective installation procedure that required you to insert every single diskette when you reconfigured certain system options or added new device drivers. Selective install now knows which disks hold the required drivers and prompts only for those diskettes it really needs.

### Better lockup

Worth an honorable mention is the fact that OS/2’s minimal security system is now a little less minimal. OS/2 2.0 users were quick

to point out that anyone could easily defeat OS/2’s passworded-lockup security system with Ctrl+Alt+Delete. Users now have the option to configure the security feature to automatically lockup when you boot into the Workplace Shell. This still isn’t perfect security, but it’s a step in the correct direction. Better still, say some users, would be an option to blank the screen without having to use a password. You can get that option, by the way, by turning on the Win-OS/2 screen blanker. Microsoft

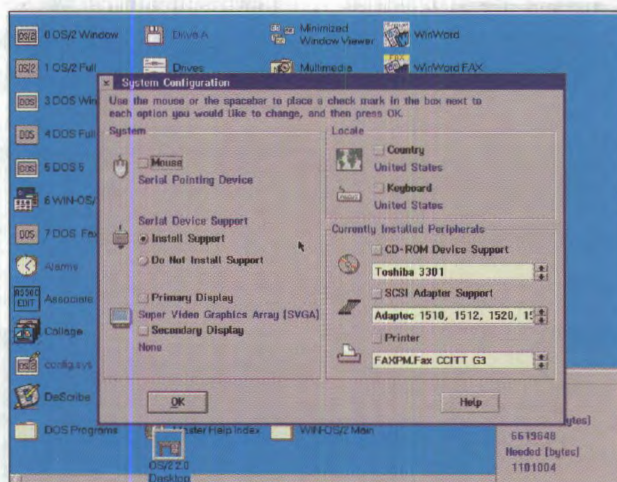


Fig. 1. OS/2 2.1's new installation screen makes installing peripherals easier.

wisely made the password aspect optional. IBM would do well to emulate Microsoft in this regard.

### What's new?

Overall, OS/2 2.1 *looks* a great deal like OS/2 2.0, but it feels different. It's not until you start looking under the hood that you start to see and to appreciate the enormity of this upgrade. The biggest “new” with OS/2 version 2.1 is the 32-bit graphics engine. Not really new to people who applied the Service Pak (an interim update that included the 32-bit modules), the version included with 2.1 is nonetheless new for users who stood pat with version 2.0.

Upgraders will also notice spiral bindings in the Settings Notebooks for their objects. More impressive than bitmapped spirals, however, is the added functionality in the Settings Notebooks. Want to change the icon for an object? Want to add menu items to a folder? OS/2 now supports drag and drop for both! Customization that was an exercise in tedium in OS/2 2.0 is a snap in OS/2 2.1.



## Multimedia!

If *media* is the plural of *medium*, isn't it already multi? The lack of linguistic logic notwithstanding, an exciting addition to OS/2 is IBM Multimedia Presentation Manager/2. Using the CD Player that comes with MMPM/2, shown in Figure 2, I hear some of the clearest music audio ever through the headphone jack on my Toshiba 3401 CD-ROM drive. When connected through the Media Vision Pro Audio Spectrum 16 card, treble, bass, volume and the mixing of left and right channels adds new dimensions to the same CDs. MMPM/2 includes facilities for handling audio disks, video disks, digital audio recording and playback, MIDI sequencers, as well as the ever-popular Soundblaster cards. For supported devices, you can control recording, playback, rewinding, volume and the absolute positioning of the read and record heads on the media.

Is your system too quiet? Once you've installed an audio board, you can use the Sound object to assign sounds to system events. Consistent with the Star Trek/Borg theme, you can add the sound of the Enterprise's transporter energizing while dragging objects. Use the sound of a laser for closing folders. When you launch OS/2, you can even hear Admiral Kirk recording the star-date into the log. Alas, Mac users have savored this perk for some time. Now PC users share the sound.

OS/2 Professional has also learned exclusively that, while not in the beta releases, the shipping version of OS/2 2.1 will include Software Motion Video. This feature lets you play full-motion video without any specialized hardware. Completely software based, the CD version of OS/2 2.1 will include sample movies. A toolkit to let users and developers exploit this feature is expected for release this summer. According to sources, the toolkit will allow capturing video to disk using supported hardware, as well as editing captured clips.

## New for Win-OS/2

Not only has Win-OS/2 gotten better and faster, it's gotten more capable as well. OS/2 2.1 now comes with the OS/2 equivalent of Windows 3.1. Scoffing at last year's claims of *impossible* by Microsoft, Win-OS/2 3.1 not only does Windows, but does

Enhanced mode to boot. Applications that said *No* under OS/2 2.0, politely acquiesce under version 2.1. All of the actual Windows 3.1 applets now run—and run well—under OS/2 2.1. Users who want Windows Solitaire or other games can borrow them from the real Windows 3.1. If you want the Windows Accessories, however, many of them now come with OS/2 2.1. If you need Write, Calendar, Packager, Media Player, Card File and so forth, you'll find them waiting for you in Win-OS/2 3.1. The only Enhanced mode applications that aren't supported are those that use Windows 3.1 VXD (virtual enhanced device drivers) and the newly-announced WIN32s API (Applications Programming Interface). So far, Windows for Workgroups (when run in Enhanced mode) is the only application that fits either category.

IBM reportedly is working on expanding OS/2's capabilities in these areas for future releases (but not for OS/2 2.1).

Also new with Win-OS/2 3.1 is the ability to run DOS applications from within Win-OS/2 programs. This allows Windows programs that rely on non-Windows installation programs or other non-Windows modules to run correctly in Win-OS/2. The addition of this capability means that another tier of Windows programs can

be added to the list of applications that are fully OS/2-compatible.

To help users configure the defaults for Win-OS/2 objects, there's now a Win-OS/2 setup object in the System Setup folder. Using the Win-OS/2 setup control, you can change the run mode (Standard versus Enhanced), clipboard and DDE behavior (global/public versus private), session display (full screen, seamless shared or seamless separate), as well as any of the Win-OS/2 settings. You can, for example, change the default level of DPMI (DOS Protected Memory Interface) memory for all Win-OS/2 objects at the same time. Or, if you decide that you don't like Win-OS/2 trapping Ctrl-Esc or Alt-Esc, you can give those keystrokes back to OS/2.

Another new OS/2 feature appears when you migrate Windows applications. OS/2 now creates the OS/2 Workplace Shell equivalent of your Win-OS/2 or Windows 3.1 setup. Each Win-

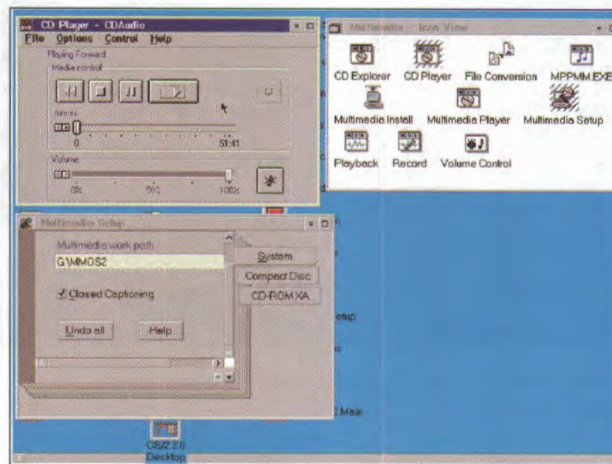


Fig. 2. OS/2 2.1 includes Multimedia for Presentation Manager/2.



## SPECIAL REPORT

dows program group gets a corresponding folder in the Windows Programs folder—Accessories, Main, Startup and so on. If you need the comfort of your Windows organization, but prefer the extra power of the Workplace Shell, now you'll have it.

### Other News

For users with most video systems, there's good news about video drivers. Many more drivers (including "seamless") are available for running OS/2 at SVGA resolutions. Even better is the fact that the latest round of drivers seems to have picked up some speed. For this look at OS/2 2.1, I used the popular Diamond SpeedStar, based on the ET4000 chip, which is used in the IBM ValuePoint series. Under the December 1992 beta, the speed at SVGA resolutions was unimpressive at best, unacceptable at worst. With the latest beta, however, you won't have to take out a second mortgage to afford speedy video performance. Sources told *OS/2 Professional* that IBM is working on expanding video support to include all types of S3-based video adapters, but that support will not be included in OS/2 2.1 itself. Drivers are under development and will be released electronically through Com-

puServe and other venues as they are finished. No completion date was available, however.

For users with CD-ROM drives, the availability of OS/2 2.1 on compact disk (CD-ROM) is an exceedingly welcome addition. The list of compatible CD drives is growing longer and longer. To install OS/2, you simply log onto your CD-ROM drive and type **Install**. The installation program prompts you to insert two blank diskettes from which it creates a two-disk boot set (necessary for installing OS/2 from the CD-ROM). Once you get through the second disk, you sail through the rest of the installation. What took close to an hour from diskettes, is shortened to about 10 minutes, depending on your system. If you later want to run Selective Install, you don't need any diskettes at all. Just plug in the CD-ROM containing OS/2 2.1, start Selective Install and away you go!

### Fax/PM

Every silver lining has its cloud. When this article was begun months ago, an unfortunate addition to OS/2 2.1 was a largely unenabled (crippled) version of Fax/PM. This applet achieves new heights in audacity. It was reminiscent of the runtime ver-

# OS/2 and OS/20

(Pretty soon you'll know it backwards and forwards.)

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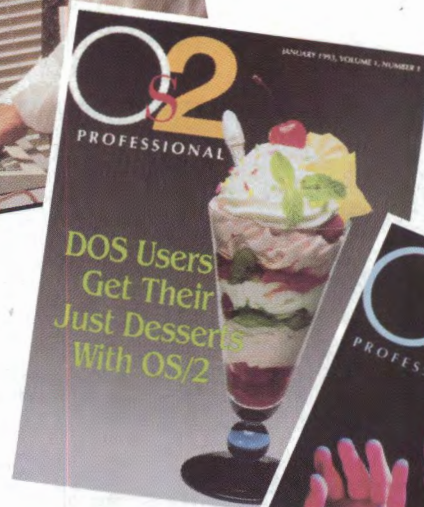
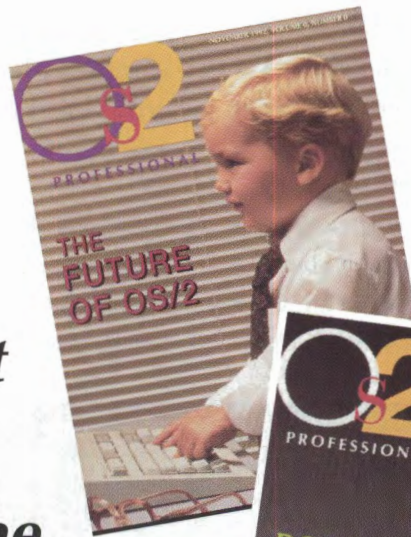
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## SPECIAL REPORT

sion of Asymetrix ToolBook Microsoft included with Windows 3.0. Running under the original Windows 3.0, ToolBook was agonizingly slow, and for many who tried it, an instant throw-away. However, at least they were smart enough to put it on separate disks bearing the Asymetrix label, so it was clearly not an integral part of Windows. There was no such luck with Fax/PM.

But that's old news. Sources told *OS/2 Professional* that the shipping version of OS/2 2.1 will not include the fax applet. IBM apparently came to the same conclusion that many beta testers did; the fax applet was a worthless piece of demo-ware. Shortly after the March beta went out to testers, IBM put a survey team to work asking testers about the Fax/PM applet. It seemed clear that IBM was reassessing the wisdom of including it.

So, what was wrong with the fax applet? For one thing, it supported only a very limited group of fax modems—and none of the ones I own. One of them, by the way, was one of the only two modems supported by a prior version of Fax/PM written for OS/2 1.3. With the new applet, that modem is effectively defunct. The other modem was never “funct” to begin with.

An even worse restriction is the fact that the fax applet limits you to just a single page—coming and going. It's easy to imagine that OS/2 users can constrain themselves to a single page for outgoing faxes. However, to just be able to see the first page of an incoming fax is absurd. To many users, this clearly positions the fax applet as little more than a nonworking demo. I can't imagine anyone being content to collect fax cover sheets and having to explain to clients that the fax they just sent was wasted.

When this section was first written, it said, “If there's any marketing sense at IBM, they'll pull Fax/PM from OS/2 2.1—it's a waste of disk space, and makes IBM and Microformatic look pretty silly. Demo-ware is one thing, but packaging it as part of the operating system seems a bit too generous.” Hallelujah! Apparently there is some marketing sense at IBM! By the way, if you need computer-based faxing capabilities, you can buy a copy of FaxWorks for OS/2 at a street price of around \$100. (A full review appears on page 85.) It works with just about any fax modem you can buy, including my hard-to-please internal Intel 400 SatisfAXtion.

### What's the same

Actually, most of OS/2 is the same as before, only better. The only same things worth mentioning here, of course, are the ones you wish had changed (such as the look and feel of many of the Productivity applets). Some of the applets have had varying amounts of insecticide applied, but most still sport the same austere *indus-*

*trial-strength-software-doesn't-have-to-look-good* facade as in OS/2 2.0. Somewhere, there must be a clone of Star Trek's Dr. McCoy saying something like “Damn it, Jim! I'm a programmer, not a decorator!”

The applets, despite the fact that they usually work well, have a look that doesn't invite one to dawdle and gaze in wonderment. Several of them also lack full CUA (Common User Access) compliance. For example, using Shift+cursor movements to select text in the Database or Daily Planner gets you nowhere. Instead, try Alt+B at both ends of the block you want to select. Intuitive and CUA, it's not.

Another poor and unchanged design decision, say many users, is the truly tedious ritual non-XGA display adapter users have to endure to change screen resolutions. OS/2 makes you insert several of the main installation diskettes as well as one or both display driver diskettes to change resolutions. You can save time if you cheat and use DSPINSTL (the display driver installation tool) rather than Selective Install. If you do cheat, however, in some instances, you might miss installing the font files for the new resolution. If you decide that you don't like the new look, by the way, changing back is equally tedious.

### Stay tuned

All in all, OS/2 2.1 brings many welcome changes and new capabilities. Most important to many users is the now-fulfilled promise of a *better Windows than Windows*. With Microsoft downplaying NT (Bill Gates was quoted recently as saying “If you don't know why you need NT, then you probably don't need NT”), OS/2 2.1 looms as the frustrated Windows user's best bet for a stable environment, a clear computing future and preemptive multitasking. As this issue of *OS/2 Professional* is going to press, MS-DOS 5.0 users are being given an opportunity to upgrade to MS-DOS 6.0. Rather than saying “One more time,” perhaps they'll just say *no* to MS-DOS, and *yes* to OS/2 2.1. ♦

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*OS/2 Professional contributing writer Herb Tyson is a computer industry analyst and consultant and the author of several books, including 10 Minute Guide to OS/2 2 and the forthcoming Your OS/2 Consultant from Sams.*









## VENDOR PROFILE

# *Surprising* SAS

At SAS, product and business development are more than good statistics.

BY HERB TYSON

**A**t the SAS Institute's 150-acre campus in Cary, North Carolina, almost all of the 1,800 staffers have their own offices. They like it that way. It certainly gets the nod from Carol Rigsbee, project manager for the PC host development group, who said, "It's quiet so it makes it very easy to get your work done."

You'll find these folks prefer the reverse of the "open office" arrangement. In fact, SAS recently opened a brand new seven-floor (counting two basements) building with 1,000 individual offices. Built to house a large and growing R&D staff, the new building even has an atrium with 20-foot palm trees.

The fact that the SAS Institute calls it a "campus" is no accident. Cofounders Jim Goodnight and John Sall were half of the North Carolina State University research team that wrote the original SAS to analyze agricultural data for a federally-funded research project in the early 1970s. At the Cary campus, they've managed to create a university milieu, complete with a cafeteria, gymnasium, daycare center and health-care facility. "It's just like being in college," says SAS workstations marketing manager Jon Flaherty. "In the gym, when you're through with a towel, you just toss it into the laundry basket."

Carol Rigsbee's office, like the offices of most of the other programmers, has walls, a ceiling, a door, a window and a solid wooden desk. "No, it's not the Herman Miller plastic," says Carol, referring to other places she's worked. In her 10x12 foot office she also has a large work table with her HP workstation and an IBM PS/2. Hers, by the way, is just one of over 500 HP workstations.



## VENDOR PROFILE

### The Evolving SAS

Half a generation of college students recognize SAS as the Statistical Analysis System, a collection of statistical modules that introduced them to computers. If you majored in anything that passes for "science," you've probably used SAS as a tool for analyzing data. From the "hard" sciences of physics and chemistry, to the social sciences of sociology and psychology, all the way to the dismal science of economics, SAS established itself as the power tool for statistics.

These days, however, statistics are just the tip of the iceberg. According to Goodnight, "We're trying to get people to think of SAS as an information delivery system" rather than pigeon-holing SAS as a narrow academic statistics package. In fact, popular impressions notwithstanding, most of SAS' business these days comes from Fortune 500 companies, not from universities. Universities account for less than 20 percent of SAS' installed base, and even less of their total revenue due to heavy educational discounts. Many of the companies that license SAS use it primarily for business and management activities.

Practicing what they preach, according to media communications specialist Hilary Yeo, the SAS Institute's staff uses SAS products for almost every aspect of their own work and management. From correspondence, to human resource management, to administration, to report generation, to accounting—almost all of it's done with SAS products.

Even their development tools are largely home grown. The SAS Institute has its very own C compiler, built upon Lattice C, which they acquired a few years back. They use the much-enhanced compiler to build the SAS modules for all of their PC and UNIX platforms from their HP workstations. Only when the mammoth program has been compiled do they then download the executables to their PCs for testing.

Why? "SAS is approaching six million lines of code and you just aren't going to get a lot of that done in a night's time on an Intel-based machine," said Jim Goodnight. "Especially running Windows," he added with a chuckle.

Even so, they aren't partisans in the operating systems showdown that's shaping up between OS/2 and the forthcoming Windows NT. "We've always tried to remain vendor neutral," said John Flaherty about the Microsoft-versus-IBM desktop turf battle. "We develop for IBM and Digital mainframes, for OS/2, DOS, Windows and UNIX." According to Flaherty, they

developed an OS/2 version in November 1990, because their customers asked for it.

SAS customers asked for a Windows NT version as well, and they'll get that, too, later this year. Asked about mid-April reports that Micrografx was backing away from OS/2 development due to weak demand for OS/2 applications, Flaherty said that there's strong demand for their OS/2 version. The OS/2 version now has an

installed base of over 8,000 for the \$895 product (with \$385 for annual renewals). They foresee additional growth in OS/2 demand with the newly released 32-bit version of SAS.

### Flat and Effective

So, how do you manage a company with 2,700 employees worldwide? "It's pretty flat," said Flaherty. President Jim Goodnight, himself a programmer with a PhD in statistics, directly oversees 26 directors, managers and vice presidents. Below that, there's a layer of managers, and below that, there's staff. If you hate unnecessary layers of bureaucracy, you'd probably like the SAS Institute's approach to management.

Probably not unrelated to the direct communications and management style is the fact that SAS is very customer driven. SAS staffers don't sit around in ivory towers inventing software they imagine might be useful. Instead, virtually all of their development and enhancements result from user requests. Once a year,



*Dr. Jim Goodnight, President and Co-founder of SAS.*



## VENDOR PROFILE

the entire installed base receives SASWARE ballots. The ballots are used to tally the likes, dislikes and wish lists. In 1992, for example, the SAS Institute plowed 128 million dollars of their \$365.5 million in revenues back into research and development—one of President Clinton's recurring campaign themes. With that kind of attitude, SAS should become FOB (Friends of Bill) PDQ!

SAS' developers also get many of their ideas from the Institute's annual meetings. Held in New York earlier this month, this year's meeting was a chance for some 5,000-plus SAS users to congregate and exchange ideas. Many of next year's SAS enhancements were probably launched just a few weeks ago at this year's meeting.

### What about OS/2?

Paradoxically, while many OS/2 adherents proclaim OS/2 as the perfect work environment, the architects of SAS for OS/2 use OS/2 only for testing their SAS products. For them, SAS itself is their integrating platform. If they load any other OS/2 applications, it's usually because they need to test DDE (Dynamic Data Exchange), or some of the new MCI (Media Control Interface) features that are finding their way into SAS.

Even so, SAS developers are impressed with much of what OS/2 has to offer. Asked about OS/2, Rigsbee said "When I first

used the Workplace Shell, it only took about 30 minutes to get used to. I personally like the OS/2 interface better than Windows." She's especially fond of the way drag and drop is implemented, as well as the multimedia extensions. "It's actually pretty exciting," Rigsbee added. "We have a module that lets you create objects. You can create an object, for example, that plays full-motion video as part of an SAS presentation." If you liked 3-D bar charts, you're going to love dancing graphs!

Rigsbee admitted, however, that the development team was disappointed by a number of bugs in OS/2 2.0. She is looking forward to the more-polished OS/2 2.1 and to taking advantage of some of the new features. Asked to compare the current Windows and OS/2 versions of SAS she said, "There's really no comparison because OS/2 is a real operating system. The 32-bit version of SAS runs much faster than the 16-bit Windows version." The real contest, she indicated, would be between the OS/2 and NT versions. ♦

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*Herb Tyson is a computer industry analyst and consultant, whose clients include IBM. He is the author of several books, including 10 Minute Guide to OS/2 2, 101 Essential Word for Windows Tips and Your OS/2 Consultant.*



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# Communicating Without "Magic"

OS/2 and Communications Manager simplify PC to host communications.

BY KELLEY SHADDRICK

**I**n the good old days of DOS, connecting a PC to the AS/400 involved a kind of magic. This mystic ritual would start with the local computer guru collecting all of his or her talismans, a drop of memory manager and a pinch of IBM's PC Support.

This ritual could last for hours as the guru wove a spell around the variety of software packages the client was running. If the client ever wanted to add any new software it could break the spell, and the ritual would start all over again.

Then along came OS/2 and its partner, Extended Edition under 1.2 and 1.3. A few years later, with the advent of OS/2 2.1, Extended Edition features were spun-off into a new product christened Extended Services. Together, OS/2 2.0 and Extended Services 1.0 simplified PC to host communications.

Communications Manager, part of OS/2's Extended Services 1.0, provides several connectivity options, various terminal emulation modes and network management facilities. And thanks to the large address space provided by OS/2, Communications Manager is much less likely to interfere with other software, one of the biggest problems associated with similar DOS-based programs.

## Connectivity

In today's business environment, the ability to utilize rapidly changing technologies is critical. The hardware and protocols my office uses to connect PCs and hosts might not be anything like yours. Fortunately, Communications Manager supports a wide range of connectivity options. It can function in an environment with twinax or coax cable, SDLC, asynchronous or X.25 communications or Local Area Networks (LANs). Its flexibility is further enhanced through the ability to manage multiple adapters and protocols simultaneously.

In the networking area, Communications Manager supports token-ring networks with a range of both IBM and non-IBM LAN adapters. Of course, as IBM's preferred network platform, strong token-ring support is to be expected. But, Communications Manager also supports Ethernet, IBM PC Network and IBM 3174 Peer Communications networking environments. Again, these include a variety of IBM and non-IBM LAN adapters and device drivers.

A company using diverse technologies can reap the benefits of Communications Manager's broad support base. Consider










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## FEATURE

the case of Hutchinson Technology Incorporated, a Minnesota-based company specializing in designing and manufacturing close-tolerance products which require chemical, mechanical and electronic technologies. To help support this effort, Hutchinson Technology has installed an advanced computing and networking infrastructure. It consists of multiple AS/400s, OS/2 Database Manager servers, OS/2 LAN Server servers and more than 1,000 PCs running OS/2 and DOS.

The data highway connecting these systems is a Token Ring Network running at 16Mb/sec. The AS/400s, Servers and Networks are spread across five sites within the United States. Additional remote connections support offices in the Far East and Europe.

As in most offices that rely extensively on technology, these AS/400s and servers fill multiple roles within the computing environment. The AS/400s run most of the production systems (Material Requirements Planning, Human Resources, Payroll and so on), provide development and testing platforms for the information engineering staff and act as file servers collecting data from the manufacturing floor. The file and database servers also collect data from the manufacturing floor, provide central storage for memos and documentation and provide a platform for the e-mail system. With this collection of AS/400s, servers and networks, ease and reliability of connectivity are major concerns.

### Terminal Emulation

Terminal emulation is the most basic support service you will need for host system connectivity. Unlike dedicated terminals, which typically support only one session, Communications Manager can support several. Consider the options available on the AS/400 alone. With up to five terminal or printer emulation sessions, options on connection types and even System/36 connectivity if needed, all of your bases will be covered. The 5250 feature emulates either IBM 3196 or 3197 terminal sessions and/or IBM 5256, 5224 or 5219 printer sessions. In order to monitor activity on all five AS/400s at Hutchinson Technology, I configured one session for each host on my PC—all in under five minutes. And unlike DOS and Windows, which get mired in terminal conflict, OS/2 removes the burden of constant resource tweaking and tuning that cripples a support staff.

Outside the AS/400 world, 5250 emulation has limited application. To support other host systems, Communications Manager provides other options; 3270 and ASCII terminal emulation round out the offerings. Should your site have multiple host types,



## FEATURE

any combination of terminal emulations can coexist on the same PC. To PC mavens, IBM's simple "ASCII support" nomenclature may bring sighs of disappointment. But Communications Manager does not restrict ASCII to unformatted, teletype-style output. Rather, it features formatted ASCII emulations such as the ever-popular VT-100 and IBM's own 3101. Likewise, the 3270 offers two terminal types: 3178 and 3279. To further enhance their functionality, both 3270 and ASCII emulation support file transfer options as well.

### Network Management

If Communications Manager were only a terminal emulator, it would simply turn a PC into a smart, but expensive, keyboard and display. Yet aside from running a few PC-based applications, that is precisely how most people use it. Upon closer examination, you will discover that Communications Manager is also a powerful network support tool. In networks where tens or hundreds of PCs are connected to hosts and servers, connectivity problems will be a daily occurrence, especially when printers are involved.

At the local level Communications Manager can display and

interpret error and status messages for the current session. You can display your session's status and also display or change Communications Manager's configuration parameters.

If a session fails, messages are generated and stored in a message log. In addition to displaying these messages, you can retrieve additional information through Communications Manager's help system. The help system offers suggestions and troubleshooting tips to help you resolve the problem—an improvement over DOS-based PC Support. With the DOS version, all that displayed was a cryptic error code. That error code and a terse explanation could sometimes be found in the PC Support error message book—if you were fortunate to have the book nearby.

### Advanced Services

Another oft-overlooked feature of Communications Manager is the advanced services area. Here, you can manage the various subsystems that run under Communications Manager, run problem determination aids and set various configuration options. Advanced services place the smallest details and tuning parameters at your disposal.

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Circle #65

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## FEATURE

For example, subsystem management services provide details about your current communications session. You can examine your active System Network Architecture (SNA) configuration and display a wealth of information on your LAN adapter. Indeed, if you need any details about your SNA topology and configuration, you will find it here. Additional information is available for X.25 communications, including data on both virtual circuits and physical links.

Of course, the value of detailed configuration information lies in the ability to reconfigure the system. Such modifications are made through the Advanced Configuration Facility. You can change parameters affecting the local PC, the name of host or hosts connected to the PC and information about host. Details as trivial as the session's color scheme are available, but typically you would use the configuration feature to add additional host sessions or change LAN adapter settings to accommodate additional networking activity.

Most users need never worry about network connection details. Indeed, you could very well lose your connection to the network by changing some of the more critical parameters. If you've used

PC Support under DOS, you've probably seen clients who have either intentionally or unintentionally altered PC Support's configuration files. The result: no host access and unhappy clients. With Communications Manager's Keylock option, you can password protect the configuration files and avoid such troublesome scenarios.

For those folks who don't like the lay of the land, Communications Manager lets you remap your keyboard to suit your tastes. Consider, for example, bar-coding devices that go between the keyboard and the PC. Bar-code readers sometimes require a few minor changes in the keyboard layout. Even if you don't have specific device support requirements, you may want to swap the Enter and right Ctrl keys to more closely resemble either a standard PC keyboard or a 5250 terminal. (Communications Manager includes named keyboard profiles for both of these variations.)

When the going gets tough, the tough use Problem Determination Aids. With these aids you can review error logs, run traces on communications-related events and dump sections of Communications Manager memory to disk for further anal-

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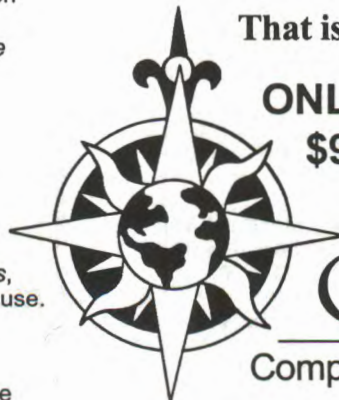
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## FEATURE

ysis. These services come into play when solving the more difficult problems associated with connectivity.

With Error Log Services, you can display or print Communications Manager's error log. This log contains rather cryptic data on error messages that can aid in the trouble-shooting process. Unlike the descriptions in the Message Log, you will probably need the assistance of the IBM manuals to understand error log messages.

The error log helps you solve past events. To obtain real-time trouble-shooting data, Communications Manager provides the Trace Facility. It collects information on Application Program Interface (API) calls and data passing through Data Link Controls (DLCs) on specific tasks. DLC data can include calls to the Advanced-Program-to-Program-Communications (APPC), APIs, X.25 APIs and all data passing through the twin-axial DLC. Again with help from some IBM manuals, you can interpret these traces. A related feature, the Dump Facility, takes a picture of selected areas of storage within Communications Manager. But generally, the trace facility offers a more convenient source for the data.

*continued on page 77*

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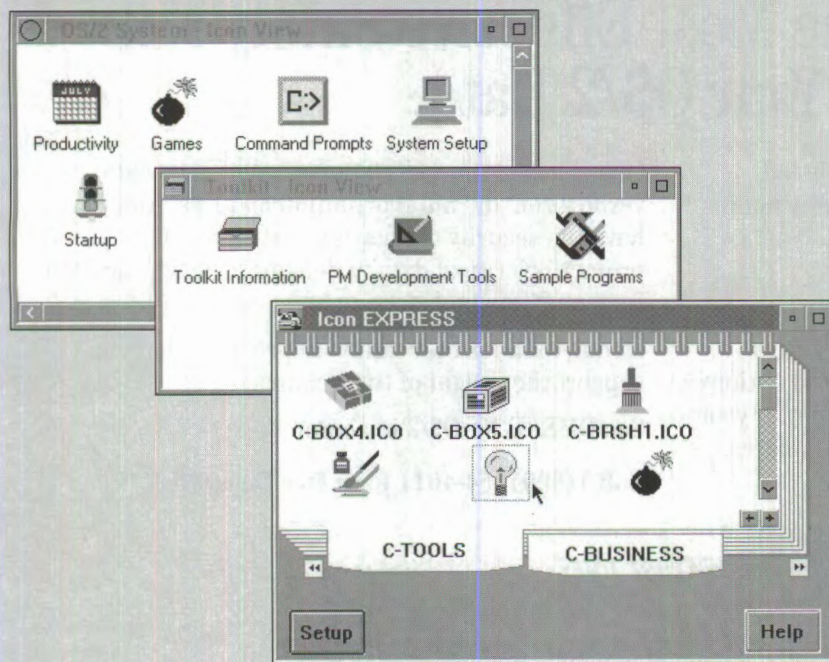
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## MARKETLINE

*Product News for the OS/2 User*

COMPILED BY MARLENE SEMPLE

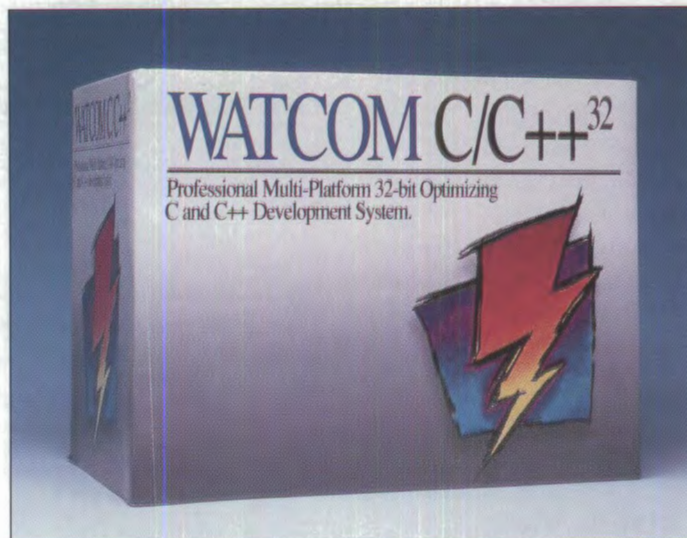
# SCOOPS

## WATCOM has a new plus

WATCOM recently announced the general availability of WATCOM C/C++ 32, a compiler package that supports the development of 32-bit applications for OS/2 2.1, with cross-platform support for Windows 3.1, Windows NT, Win32s, DOS and AutoCAD ADS/ADI, as well. The wide range of platforms allows developers to leverage their investment and reduce their risk and expense.

The new C++ implementation includes templates and exceptions, features that help developers realize the benefits of object-oriented technology—reusable code, increased reliability and reduced maintenance.

In addition to complete compilers for C and C++ , the



package includes a debugger, profiler, linker, 32-bit DOS extender, make utility and other tools. The C++ compiler follows the ANSI draft standard, and the C portion follows the ANSI

Standard and IBM SAA.

The compilers support the development of 32-bit applications for OS/2 2.x and the use of OS/2 2.x as a host system in cross development for

other 32-bit environments. Windows NT and DOS can also act as hosts for application development.

The tools are integrated with IBM's WorkFrame/2 programming environment so that 32-bit OS/2, DOS and Windows applications can be developed and debugged within the OS/2 environment. All system functions of OS/2 2.x are accessible from C, including the Presentation Manager API.

The suggested retail price of C/C++ 32 is \$599. An upgrade from WATCOM C/386 version 9.0 is available from WATCOM for \$199.

WATCOM, 415 Phillip St., Waterloo, Ontario, Canada, N2L 3X2, (800) 265-4555.

## Recovery made simpler

Responding to user requests for simpler system recovery from Sytos Plus, Sytron Corporation has introduced Sytos Rebound.

Working in conjunction with Sytos Plus, Sytos Rebound can completely recover the operating system, data files and applications (including IBM LAN Server and Microsoft LAN Manager) entirely from tape. You no longer need to install

OS/2 before restoring files—you can be up and running from a blank, formatted disk in as little as 15 minutes.

Sytos Rebound carries a list price of \$99 (or \$79 for current users of Sytos Plus for OS/2 until September 1993). It is also available bundled with Sytos Plus for \$470.

Sytron Corporation, P.O. Box 5025, Westboro, MA 01581-5025, (508) 898-0100.

## The RAIDs continue

Legacy Storage Systems has introduced the Legacy HFD, a level five Redundant Array of Independent Drives (RAID) for OS/2. A RAID-based system provides data protection by striping data and error correcting code (ECC) across multiple drives. In the event of a drive failure, the system continues operating. And with Legacy HFD's hot-swap feature, the failed drive can be replaced while

the power is still on.

The Legacy HFD can support up to two 4GB volumes using OS/2 HPFS or four 2GB volumes using FAT. The list price for the software is \$995. A complete RAID system including 1GB storage, software, adapter and cabling lists for \$9,995.

Legacy Storage Systems, 25 South St., Hopkinton, MA 01748, (508) 435-4700.



# New Products

## OS/2 front end for PKZIP/PKUNZIP

Point and click, drag and drop to compress and uncompress files with ZIPMAN, an OS/2 interface for PKZIP and PKUNZIP. Simply open the drive object that contains the file; then drag the file and drop it on the ZIPMAN icon. Or, you can double click on a ZIP file to start ZIPMAN automatically. Once ZIPMAN has been activated, you use the pull-down menus on the action bar to select options.

ZIPMAN was developed by Software Builders, Inc., an Atlanta company that specializes in writing OS/2 and Windows front ends for existing VM, MVS, UNIX and DOS applications. ZIPMAN for OS/2 sells for \$39.95. A Windows version is also available.

Software Builders, Inc., 1023 Chateau Lane, Smyrna, GA 30082, (404) 319-9621 or fax (404) 319-7754.

Filename	Uncomp. Size	Type	Comp. Size	Percent Comp.	Date	Time	CRC
BS.DOC	2,827	deflated	925	68%	01/21/93	11:41am	FC7CF
COVER.DOC	3,198	deflated	1,018	69%	05/13/92	11:24am	6188C
INVTRY.DOC	2,560	deflated	915	65%	01/22/93	11:24am	63B47
LAWLET	4,789	deflated	1,953	60%	01/16/93	02:43pm	E5E42
LAWLET.DOC	4,608	deflated	1,777	62%	01/20/93	09:39pm	89FA1
RESUME.DOC	3,864	deflated	1,714	56%	09/03/92	07:10am	EF3F0
ROBIN.DOC	6,095	deflated	2,401	60%	06/01/92	00:51am	A9CEA
STEFANIE.WDB	1,513	deflated	514	67%	05/04/92	11:07am	BB4C4

ZIP Comment: Backup of Stef's stuff

### Document processing

Solution Technology, Inc., has introduced three OS/2-based image processing products that work in conjunction with IBM's Image Plus/2 product for mainframes and AS/400s. The first, BarCode Anywhere extracts bar-code information from a scanned image—indepen- dent of the barcode's orientation on the page. A second product, FormsReader, provides form recognition for Optical Character Recognition (OCR) applications. FormsReader supports multiple, user-formatted form styles. As the mixed forms are scanned, FormsReader selects the appropriate form style and extracts the data. FileScan, the third product in the suite, automatically files and indexes incoming data from fax cards or other image sources.

Solution Technology, Inc., 1101 S. Rogers Circle, Boca

Raton, FL 33487, (407) 241-3210.

### Magus View renders PostScript images

Magus, a company specializing in document-related software, recently announced the first version of its PostScript language rendering library, Magus View.

Magus View is a Dynamic Link Library (DLL) that enables application developers to create programs that render PostScript images, either on-screen or as printed output, independent of the application that produced the image.

"An application that uses Magus View can display or print the output from virtually any program, no matter what type of computer it originated on," explains Dr. Kevin Thompson, president of Magus. "You'll see PCs displaying

Macintosh and UNIX output as well as PC-generated files."

The Magus View DLL supports all standard PostScript display functions, including vector and bit-mapped fonts and the standard vector graphics and clipping functions. In addition to window-management calls, Magus View provides a page-extraction capability, which automatically retrieves and displays specified pages from a document. It also supports arbitrary scaling and rotation of images and printing to both PostScript and non-PostScript printers. Magus View uses the fonts installed on the user's computer, which under OS/2 would be Adobe Type 1 and Type 3 fonts.

Prices start at \$495 for a developer's kit.

Magus, P.O. Box 390965, Mountain View, CA 94039-0965, (415) 940-1109.

### WinGEN for 2.1 Apps

Developers can use a new version of WinGEN to create database-independent GUI applications for OS/2 2.1. The advanced WinGEN-created applications can access databases from a long list of database managers.

This new tool also converts ObjectVision interpreted applications into high-speed, compiled applications using Borland, Microsoft or Watcom compilers.

WinGEN is available in a screen-generator-only version with separate engines available to support needed databases. It also supports the XVT Video Library for the creation of applications for OS/2 and other operating systems.

Buzzwords International Inc., RT1 Building 215-T, Cape Girardeau, MO 63701, (314) 334-6317.



## Sound off

Macintosh users have long been fond of the special sound effects they can associate with specific events: boinging springs when ejecting a disk, transporter sounds when opening a communications program and so forth. Now, OS/2 users can add similar capabilities to their systems with System Sounds for OS/2 from BocaSoft. System

Sounds for OS/2 has over one megabyte of sound effects in Microsoft audio format including a full range of popular effects from Prosnus. The software requires the OS/2 multimedia extension set, or MMPM/2, which will be packaged with IBM's OS/2 2.1.

BocaSoft, 117 NW 43rd St., Boca Raton FL 33431, (407) 392-7743.

## FlexText for compact printouts

FlexText is a print utility that produces hardcopy listings from ASCII text files. Target users for this 32-bit program are those who print large text files such as reports or source listings. Software developers, for instance, can save money by using FlexText to print compact hardcopy source listings.

Features include the print-

ing of four pages per sheet, scalable fonts, a wide variety of font sizes, borders, ANSI control character translation, adjustable tabs, export files, printing and browsing of clipboard contents, booklet style and selectable page ranges.

Individual licenses are \$49. Site licenses are also available.

Extension Software, 921 West Meseto Ave., Mesa, AZ 85210, (602) 820-0321.

# News

## Somers groups transplant

Most of the OS/2 marketing and promotion group has just relocated their offices from pastoral Somers, New York, to Austin, Texas. The move includes media relations, advertising and marketing.

## Business Software twosome

Business Software Solutions—formerly the Windows and OS/2 Conference—will be running side-by-side with The Software Development Conference. The unusual arrangement seems to be catching among exhibitors. Both conferences will be held on the same floor, separated by a curtain.

Each conference will have separate exhibits, and separate sponsors. Although that means duplicative displays, major players such as IBM have agreed to participate, according to sources at Miller-Freeman, which is staging the twosome.

For example, IBM will have duplicate displays, one at each end of the hall. *OS/2 Profes-*

*sional* is the principal sponsor from the OS/2 community.

## Skill Dynamics announces courses

Skill Dynamics, an IBM company, has announced new OS/2 2.1 courses to be offered at customer sites as well as in Skill Dynamics' own classrooms.

The four classroom courses are designed to serve a wide range of users. The "OS/2 2.1 User Workshop" is a one-day course designed for non-technical customers running applications and printing output. For more technical users, the two-day "Using and Customizing OS/2 2.1" course covers more advanced topics on customizing objects. "Installing and Supporting OS/2 2.1" is a three-day course, designed for people supporting others using 2.1.

And for those who will be setting up OS/2 systems for small and large businesses, there is the "Advanced Support Workshop." This two-day workshop focuses on real-world problems. Students are given realistic system support concerns and are taught how

to analyze and solve problems. Skill Dynamics can be reached at 800-IBM-TEACH.

## XVT adds support for portable GUIs

XVT Software Inc., has added cross-platform support for seven GUIs to its XVT Portability Toolkit and XVT-Design software.

With the new releases, developers can create graphical user interfaces that are portable to most PCs and a majority of workstations, according to XVT. The new support includes Hewlett Packard Series 800 (HP Series 300, 400 and 700 are already supported), Data General AViiON workstations, Silicon Graphics IRIS 4D workstations, servers and RISC PCs running X Windows and Motif, and Release 2.0 of the SCO Open Desktop.

With the addition of the new support, more than 30 versions of the SVT Portability Toolkit are available.

The supported GUIs are OS/2 Presentation Manager, Microsoft Windows, Microsoft Windows NT,

Macintosh, X Window System with Motif on 10 platforms, X Window System with OPEN LOOK, character screen interface for non-graphical UNIX, DOS and VMS terminals.

## ImageSoft to publish Object/Engineering

ImageSoft, an international software publishing firm, has agreed with Network Integrated Services, a software development firm, to publish Object/Engineering.

Object/Engineering is an advanced C++ scientific class library of ready-to-use components that turns a C++ compiler into a modeling tool. It was formerly marketed by NIS as Meijin++ Expert.

The Object/Engineering library is of particular interest to engineers and scientists developing C++ applications. The product features a tutorial for object-oriented modeling using C++. The tutorial includes advanced C++ tips, simulation, case studies and signal processing. ♦







# Twin Cities Guru on the Go

A fan since the 2.0 beta, Marcus Krumpholz promotes OS/2 both on the job and off.

BY BRADLEY KLIEWER

If you want to reach Marcus Krumpholz, don't bother calling the office. It's not that he works at home or won't take calls. Rather, as the OS/2 support guru for JWP Information Systems' Minneapolis office, he's constantly away from the office and working at client sites all over the Twin Cities of Minneapolis and St. Paul, Minnesota.

As a systems engineer for a major corporate computer sales and consulting firm, you might expect Krumpholz's interest in OS/2 stemmed from talks with IBM—a major supplier. Ironically, Krumpholz first discovered the advantages of OS/2 2.0 through a client who just happens to be another big systems vendor: Cray Research Incorporated.

The setting: December 1991. OS/2 2.0, though widely available and much talked about, was still in beta testing. Bertram Moshier, a project leader for Cray-OS/2 Communications at the time, had purchased a PC from JWP for a special project. As is typical with many new system installations, Moshier experienced problems and Krumpholz was sent to assist. As they were working on the system, the discussion turned to Windows, and as Krumpholz remembers, "How terrible it was at multitasking. Then Moshier started talking to me about OS/2." Moshier, with his background in supercomputers, was quite impressed with OS/2's architecture. Despite bad rumors Krumpholz had heard regarding OS/2, Moshier's enthusiasm for the system was infectious. By January 1992, Krumpholz had signed up for the OS/2 beta program—not as a project for JWP, but rather out of personal interest in OS/2.

Things developed rapidly from there. JWP discovered Krumpholz's newly found expertise could give them an edge in the PC business market. Minnesota nice—an understated, self-deprecating manner—belies the powerful corporate center the Twin Cities have fostered: Cargill, Pillsbury, General Mills, Dayton/Hudson, Northwest Orient, 3M, IDS and Norwest Banks, to name a few. Many of these companies have substantial investments in IBM hardware all the way from the big iron mainframes down to the no longer so lowly PCs.

Some of these corporations were already testing OS/2 on their systems. And one of JWP's major clients had what seemed like an excellent application for this exciting new technology. Their field representatives required local and remote connectivity to network servers: including fax, modems and business software that could work independently in the field and as part of the team at the home site.

The Macintosh already possessed the required elements, but a corporate commitment to IBM solutions was enough to keep the project moving through two OS/2 2.0 betas and the 2.0 GA (General Availability, or final release). Unfortunately, OS/2's promise outweighed its abilities, and the project was finally terminated in favor of the Mac. As Krumpholz recalls, "We spent three months trying to get the OS/2 version to work, and the Mac version pretty much worked from day one."

Throughout the process, IBM's assistance and support proved invaluable. When the going got tough, IBM flew a top-level support representative from Boca Raton, Florida, to Minneapolis.



## USER PROFILE



Marcus Krumpholz presides over the Minnesota Users Group's one-year birthday for OS/2.

And unlike the typical end user who must wait for a callback when requesting technical support, Krumpholz had more direct access to the OS/2 support groups. "I can request a certain group, or they will automatically transfer me to whoever's group the operator feels is best." Krumpholz, along with Moshier and others, realized that IBM could not single-handedly support what was sure to be a rapidly growing user base. They decided to form the Minnesota OS/2 User Group, where the smaller end users, who did not have the clout to hold IBM's full attention, could have a local support base.

Originally, Krumpholz simply held a seat on the group's board. But he would soon take a seat at a new board as conference manager on the Warehouse BBS, an electronic Bulletin Board System that offered services to the Minnesota OS/2 User Group. Time commitment for management functions on the BBS can vary widely. Krumpholz estimates that the average is probably in the half-hour to one-hour-per-day range.

By the end of 1992, the user group faced a minor crisis. Moshier, who had been the outspoken, driving force behind the organization accepted a job with IBM's OS/2 Planning Committee in Boca Raton, Florida. Krumpholz, although publicly more soft-spoken than Moshier, was asked to fill his shoes. The vision Krumpholz brings to the group has been invaluable, according to Bob Brickweg, an IBM PSP Marketing Program Manager in Minneapolis. Krumpholz has been working to build a strong support team by integrating the strengths and resources of IBM, JWP and the Minnesota OS/2 User Group.

This vision is not limited to the User Group—he also wants to build a commercial support base by combining the strengths of IBM and JWP. "I'd like to work with IBM and JWP to train and support individuals [within JWP] to create an OS/2 support team in the Twin Cities. I'm trying to integrate my role as president of the user group, working with an IBM dealer and acting as an OS/2 advocate, and integrating it all."

*continued on page 55*



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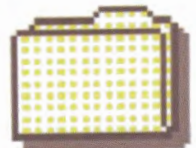
Drag a file object from one folder and drop it in another to move it. Drag a folder



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object and drop it on the shredder to delete it. Drag a file object and drop it on the printer to print it. In the OS/2 Workplace Shell,™ common procedures become intuitive clicks of a mouse.

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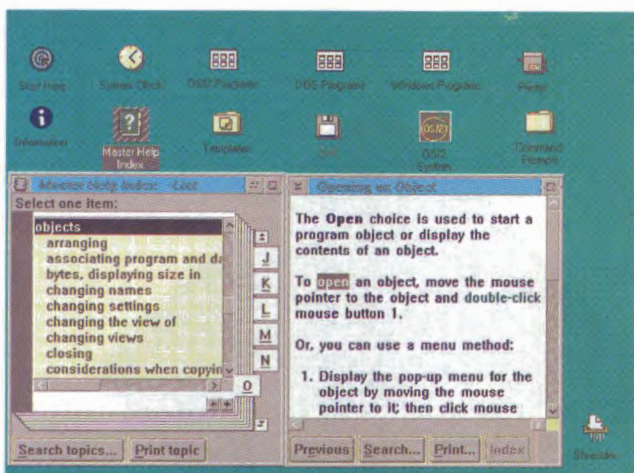
# higher

working within the 640K barrier, take advantage of more of your computer's memory.

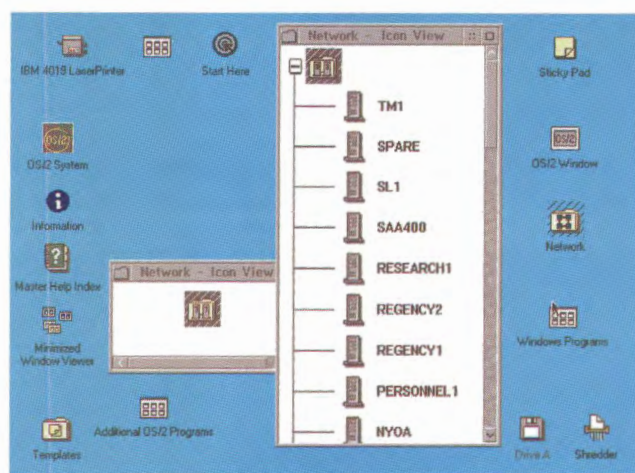
Use the PMSeek feature to search for files. Use the built-in ICON editor to custom-design your own icons. Use the Productivity Alarms object to schedule automatic backups,

# level.

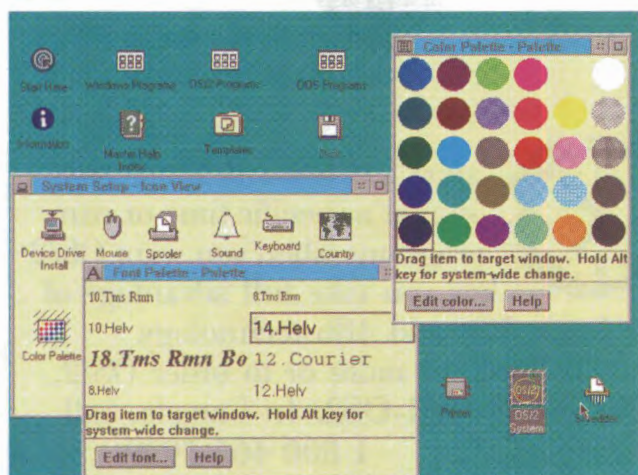




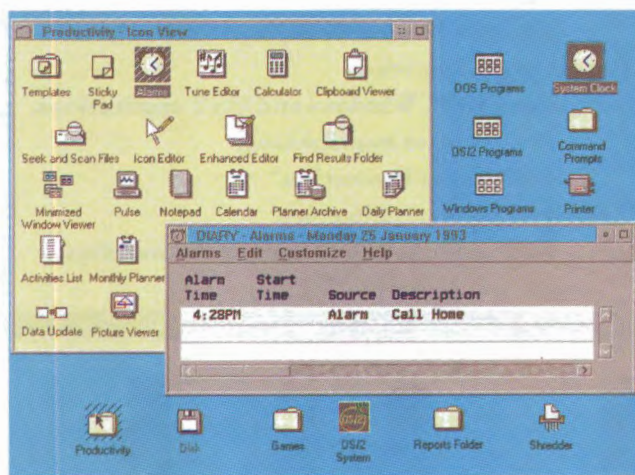
*In the Workplace Shell, everything appears as an object. It's a simple, intuitive, more efficient way to work.*



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*Organize and customize your desktop to look and work the way you want it to.*



*You can set alarms to remind you of events with the Alarms function in the Productivity folder.*





## USER PROFILE

*continued from page 50*

Between work and after-hours duties with the user group, Krumpholz has managed to fill his life with computers. Most of this time is spent with OS/2. But don't expect him to stand idly by while the industry develops. Even as we spoke on the phone, he was installing a beta version of Windows NT on his home system. "Wow!" he exclaimed, "Did you know NT will install on an OS/2 HPFS partition?" referring to OS/2's native disk format. Although a bit embarrassed by the revelation that he's even looking at "the other side," Krumpholz should be well prepared to give personal insight to the upcoming comparisons between IBM's and Microsoft's proposed successors to the DOS throne.

Meanwhile, OS/2's growth and diversification is reflected in the Minnesota OS/2 User Group. Originally scheduled for evening meetings to accommodate personal users who couldn't attend on company time, the group is now considering two meetings each day. As Krumpholz explains, "We are beginning conversations with a downtown Minneapolis corporation which would like to host a daytime meeting." These afternoon meetings would be followed by a dinner and then the general evening meeting. "The group has grown to the point where it's big enough to generate Special Interest Groups (SIGs)," says Krumpholz. In addition to the daytime group, these SIGs would include special topics such as sessions for novice users.

Dedicated users like Krumpholz have been instrumental in leading user groups across the country. But Krumpholz is quick to point out that running an effective organization is a team effort with IBM playing an important role. In reference to the speakers, facilities and time which IBM has provided the group, Krumpholz gives credit to one of IBM's pointsmen in the endeavor, "Bob Brickweg really helped start it...he does the behind-the-scenes magic with IBM."

But even with help, as the user group and OS/2 installed base grows, Krumpholz is certain to keep busy. Armed with the tools of the trade—portable computer, fax, pager and computerized voice mail—Krumpholz is ready to stay in contact at the forefront, despite days spent outside his central office. And for now, it's enjoyable. Reflecting on his work to promote OS/2, he admits, "This is my spare time...for now, this is what I want to do." Such dedication on the part of its users, is but one of the strengths OS/2 brings to the PC market and anticipates a bright future for all OS/2 users. ♦

*Brad Klierwer is editor of OS/2 Professional.*



### **AutoTester Solves Your Complex OS/2 Presentation Manager Testing Problems.**

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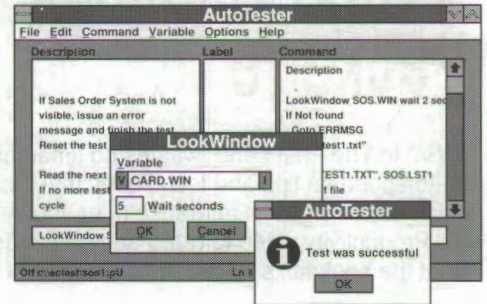
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# THE LAW

Legislation and Regulation for the Information Age

BY TIMOTHY J. BURGER

• **Export Rules Change.** Changes in export regulations from last December are just now coming into focus for many. First, applications to export certain qualifying computers to Poland and the Czech and Slovak countries "are likely to be approved expeditiously," according to the U.S. Commerce Department publication, *Software International (SI)*. The chute has also been greased for quicker approval of trade in certain computers, including the Intel 80486 and the Motorola 68040, with 36 new, so-called "Free World" countries, such as Argentina, Brazil, Chile, India, Israel and Kuwait.

Commerce also loosened restrictions on marketing "general purpose cryptographic equipment," according to *SI*. These items include:

- "Access control equipment, such as automatic teller machines, self-service statement printers or point-of-sale terminals that protect...password or personal identification numbers, but [do] not allow for encryption of files or text."

- "Data authentication equipment that calculates a message authentication code that verifies users or ensures no text alteration but does not allow for encryption of data or text."

- "Cryptographic equipment specially developed or modified only for use in banking or money transaction machines."

Countries receiving such products under the relaxed regulatory situation will have to agree that they won't pass the goods on to certain specified countries, such as Iran, for which the old restrictions on such equipment still apply.

• **European Update.** The European Community (EC) plan for consolidating markets is taking shape. Changes in

software copyright law, customs duties and the collection of the value added tax (VAT) are in store. Note that VAT is the very same sort of levy which gained so much attention here when it was revealed last month to be a revenue enhancement avenue which the Clinton administration was considering. Some details:

- **Software protections.** Beginning this year, the EC commences proliferation of its "Directive on the Legal Protection of Software Programs." As of mid-March, the directive had been implemented in Denmark, France, Greece, Ireland, Italy and the United Kingdom. According to foreign trade documents, "This directive standardizes and, in some cases, strengthens the copyright protection available in the EC's 12 member states. The EC software directive protects computer programs as literary works for the life of the author plus 50 years; gives copyright holders the rights of reproduction, translation, adaptation, arrangement, distribution and rental; and allows decompilation only to determine interoperability."

- **Customs.** Under EC classification, harmonized system numbers for computer software and hardware are 85.24 and 84.71, respectively. The hardware duty rate will be 4.9 percent while the rate for software will be zero.

- **VAT.** Although VATs on U.S. products will still be collected at ports through which they enter EC countries, it should be noted that importers to the EC will have to label their software as follows (to help in determination of the VAT): Exporters to the EC "must list the value of the software and the value of the media separately." In addition, regulations stipulate that exporters may list these two values on one or two invoices (one for the media only and one

for the software). This will ensure that the tax is applied to the correct, much lower value.

• **Court Rulings.** A series of court decisions "may narrow the scope of copyright protection for computer software" according to the Commerce Department's publication, *U.S. Industrial Outlook 1993*. Examples:

- *Computer Associates International, Inc. v. Altai, Inc.* (1992). The U.S. Court of Appeals, 2nd Circuit, concurred in "a lower court ruling that only a program's 'text' (for example, source and object code) may be protected by copyright, not its 'behavior' or operation."

- *Apple Computer, Inc. v. Microsoft Corp. and Hewlett-Packard Co.* (1992). Thought to have the potential to affect copyright protection similar to the above decision, "restrict[ing] the protection available for the 'look and feel' of computer programs.... This ruling suggests that the appearance ('look and feel') of a program is protected by copyright only if each individual element is original."

- *Sega Enterprises, Ltd. v. Accolade, Inc.* (1992). This decision responded to an injunction handed down by a U.S. District Court that "disagreed with" *Computer Associates International, Inc. v. Altai Inc.* and banned "Accolade from developing, manufacturing or selling products for Sega's game machine." The court ruled "that taking apart software made by another manufacturer violates copyright law." But, in "the first opinion on this subject by an appeals court," the 9th Circuit Court of Appeals "overturned this injunction, permitting reverse engineering." ♦

.....  
*Tim Burger is a reporter for Roll Call, the twice-weekly "Newspaper of Capitol Hill."*



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# The Information Presentation Facility

## Part I: Writing Online Information

BY TODD CROWE

**W**hen you first received OS/2 2.0 you may have been surprised at how little printed documentation was included. This was possible in part because the OS/2 Workplace Shell is very easy to learn and use. However, the primary reason IBM could embark on this tree-saving mission was that most of the documentation could be retrieved electronically through the online help system. OS/2's online information and help was written primarily with the Information Presentation Facility (IPF). In this two-part series on the IPF, you will learn to write online information and, for software developers, to add online help to your applications.

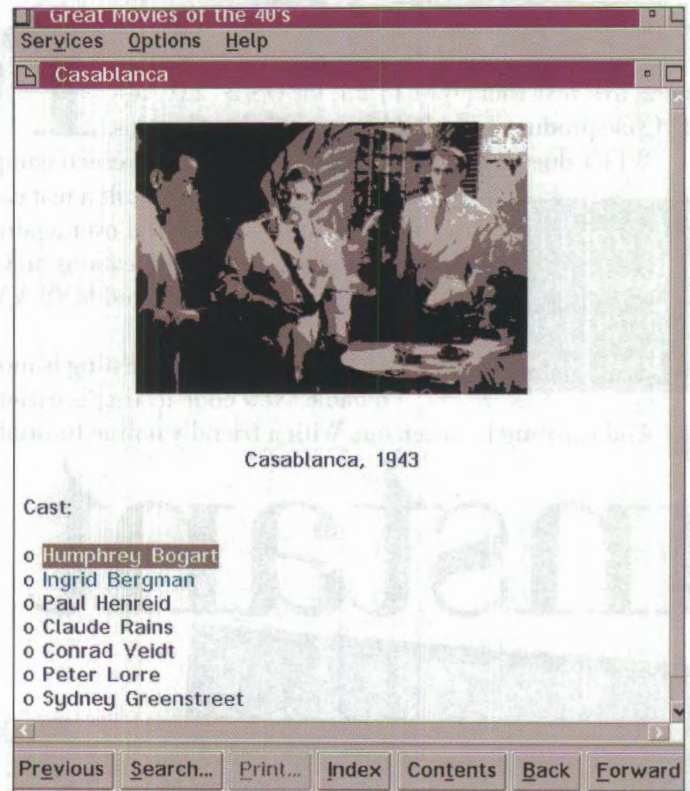
Since online help and information are so pervasive within OS/2, I will assume that you are already familiar with the user interface and its features. This first article will introduce the concepts and tools necessary to write online help and information. The second article will build on the information presented here and will explain how to add online help to applications.

### First Things First

Before starting, you should take note of two things. First, you do not need to be a programmer to write online information. You may think of online information simply as text presented in an electronic format. Anyone who has written documentation with a word processor should be able to write online information with the IPF. Second, the IPF uses tags to format the online information. When you see these tags, do not be dismayed by their appearance or prevalence. Despite their odd appearance tags are really very easy to learn and to use.

### Getting Started

Online information or "documents" written with the IPF are very much like the printed documents with which you are already familiar. Online information usually has a title, a table of contents, an index and a num-



**Listing 1**

```
.*
.* IPF tag file for "Great Movies of the '40s"
.*
:userdoc.
:title.Great Movies of the '40s

:h1.Introduction
:p.:lines align=center.
:color fc=blue.
:font facename='Tms Rmn' size=24x12.
Great Movies of the '40s
:font facename='Tms Rmn' size=0x0.
:color fc=default.
:elines.
:p>Welcome to "Great Movies of the '40s," an
encyclopedia of movies from the golden age of
motion pictures.
```



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## CODE CACHE

```
. *
.* Movies, by actor
.*
:h1. Actors and Actresses
:p. Alphabetical listing of actors and actresses
and the movies they starred in.
.*
:h2 id=Bergman. Ingrid Bergman
:il id=Bergman. Bergman, Ingrid
```

### An unordered list

```
:ul compact.
:li.:link reftype=hd
refid=Casablanca.
Casablanca:elink.
:eul.
.*
:h2 id=Bogart. Humphrey Bogart
:il id=Bogart. Bogart, Humphrey
:ul compact.
:li.:link reftype=hd
refid=Casablanca.
Casablanca:elink.
:li.:link reftype=hd
refid='Big Sleep'. The Big Sleep:elink.
:eul.
.*
:h2 id=Grant. Cary Grant
:il id=Grant. Grant, Cary
:ul compact.
:li.:link reftype=hd
refid=Story. The Philadelphia Story:elink.
:eul.
.*
.* Movies, by genre
.*
:h1. Genre
:p. Movies by genre.
:h2. Drama
:il id=Drama. Drama
:p.:link reftype=hd
refid=Casablanca. Casablanca:elink.
:h2. Comedy
:il id=Comedy. Comedy
:p.:link reftype=hd
refid=Story. The Philadelphia Story:elink.
:h2. Suspense
:il id=Suspense roots=Suspense. Suspense
```

### The :isyn. tag

```
:isyn root=Suspense. Mystery
:p.:link reftype=hd
refid='Big Sleep'. The Big Sleep:elink.
```

ber of subsections divided by headings and composed of paragraphs. The document may contain pictures, tables, figures and footnotes. Text may be formatted in different fonts, sizes and colors. But, whereas you probably use a word processor to format your printed documentation, you must use tags to format online information generated with the IPF. Instead of printing an online document when it is complete, you compile it with an IPF compiler. The IPF compiler converts a document with imbedded tags into an .INF file that may be read with the OS/2 VIEW.EXE command.

An IPF tag is a short word or group of letters and numbers preceded by a colon and followed by a period. For example, :p. is a common tag. A tag defines how and where text (or graphics) will be displayed. The :p. tag tells the IPF that the text following the tag is a new paragraph. There are many different tags: some tell the IPF to display a picture or a table, some tell it to display a string of text and others tell it how to structure the document. Fortunately, the IPF tag names are mnemonic and thus are easy to remember.

Many tags have attributes. Tag attributes augment the tag by defining additional characteristics. For example, the :lm. tag, which sets the left text margin, has a margin= attribute. The margin= attribute tells the IPF to set the left text margin to a particular value. When including attributes, the tag's period follows the attribute listing rather than the tag name itself (e.g., :lm margin=10.)

Sometimes data appears in blocks. In addition to the initial tag, a block of data must be followed by an end tag. The end tag name is always the same as the initial tag name preceded by an 'e' (e.g., :fig. and :efig.). These pairs define the characteristics of the text in between them. Other tags have no explicit end and define characteristics either for the entire document or for all text within the current section. As you will see in the example, pairs of tags like :fig. and :efig. may be nested.

### Using Tags

Every online document or help file must begin with the :userdoc. tag and end with the :euserdoc. end tag. These tags tell the IPF compiler that the enclosed information is an IPF document. The text and tags within the :userdoc. block define the content and structure of the docu-



## CODE CACHE

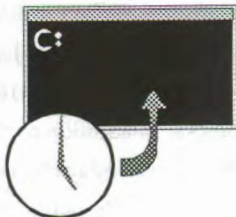
ment. The `:title` tag can be used to set the title of the online document.

The `:h1` through `:h6` tags provide structure for an online document by defining section headings—`:h1` is a first level heading, `:h2` second level and so forth. By default, headings of 1, 2 and 3 automatically appear in the table of contents. Headings appear sequentially just as they will appear in the table of contents, and in the order in which a user would see the sections while paging through the document with the **Forward** button. Text following a heading defines the contents of that section; together, a heading and its contents are called a window.

Each heading has several different attributes. The most important are the window identifier attributes: `res=`, `id=` and `name=`. When displaying an online document in OS/2, each section has its own window. By establishing a name for each window, the window identifier attributes provide a convenient reference point for hypertext links. Any one of the window identifier attributes can define the name, but there are limitations on the use of each.

```
. *
. * Movies, by title
. *
:h1.Titles
:p.Alphabetical listing of movie titles.
. *
:h2 id='Big Sleep'.The Big Sleep
:i2 refid=Bogart.The Big Sleep
:i2 refid=Suspense.The Big Sleep
:p.:lines align=center.The Big Sleep,
1946:elines.
:p.Cast:
:ul compact.
:li.:link reftype=hd
refid=Bogart.Humphrey Bogart:elink.
:li.Lauren Bacall
:li.John Ridgely
:li.Martha Vickers
:li.Dorothy Malone
:li.Elisha Cook, Jr.
:eul.
. *
:h2 id=Casablanca.Casablanca
:i2 refid=Bergman.Casablanca
```

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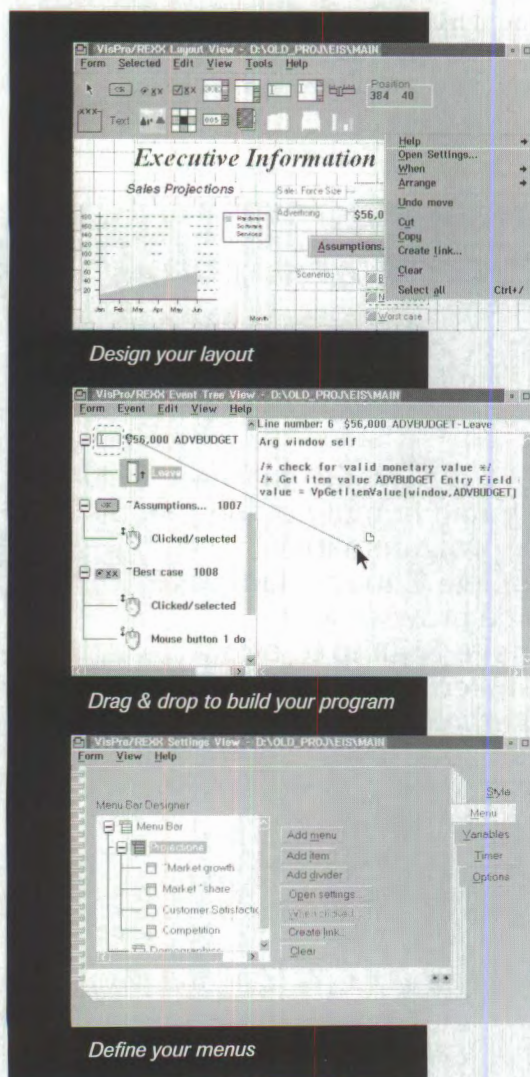


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## CODE CACHE

You can create an index with the :i1. and :i2. tags. The :i1. tag defines a primary index entry (limited to one occurrence for each window). Secondary index entries, created with the :i2. tag, may be placed anywhere in the document and refer to a particular primary index entry. When a user opens the online document's index and selects an index entry, the IPF displays the window (heading) in which the primary index entry tag appeared.

Within a window you may include graphics with the :artwork. or :cgraphic. tag; define tables with the :table. tag; create various types of lists with the :sl., :ul. and :ol. tags; change fonts with the :font. tag; and change text color with the :color. tag. While these are the most common, many other tags and features are also available for use within a section. More examples will follow in the discussion of Listing 1 (the example online document starting on page 59).

### Hypertext Links

Printed documentation often contains cross references to

```
:i2 refid=Bogart.Casablanca
:i2 refid=Drama.Casablanca
```

### The :artwork. tag

```
:artwork name='csblnca.bmp' align=center.
:p.:lines align=center.Casablanca, 1943:elines.
:p.Cast:
:ul compact.
:li.:link reftype=hd
refid=Bogart.Humphrey Bogart:elink.
:li.:link reftype=hd
refid=Bergman.Ingrid Bergman:elink.
:li.Paul Henreid
:li.Claude Rains
:li.Conrad Veidt
:li.Peter Lorre
:li.Sydney Greenstreet
:eul.
.*
:h2 id=Story.The Philadelphia Story
:i2 refid=Grant.The Philadelphia Story
:i2 refid=Comedy.The Philadelphia Story
:p.:lines
```

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## CODE CACHE

```
align=center.The Philadelphia
Story, 1940:elines.
:p.Cast:
:ul compact.
:li.:link reftype=hd
refid=Grant.Cary Grant:elink.
:li.Katharine Hepburn
:li.James Stewart
:li.Ruth Hussey
:li.John Howard
:li.Roland Young
:eul.

:euserdoc.
```

text in another section. (See any dictionary, encyclopedia or reference manuals for common examples.) The IPF provides a much more powerful cross-referencing feature called a hypertext link. Hypertext links allow the user to instantly jump between sections of a document. To create a hypertext link, use the `:link.` and `:elink.` tags. The text between the tags, the hypertext phrase, is highlighted and selectable when displayed. If the user selects the hypertext phrase, the IPF automatically displays the corresponding window.

There are several different types of hypertext links, but the most common is the heading link. A heading link may be created by using the `id=` attribute in a heading tag and by setting the `refid=` attribute of `:link.` tag to the same value. The example online document in Listing 1 includes several examples of the `:link.` tag.

### Bringing It All Together

So far we have looked at most of the key components of an online document. Now we need to bring everything

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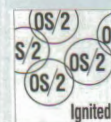
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together. As an example, let's assume that we want to create an online encyclopedia of movies from the 1940s. We would like to search for movies by actor, genre or title. Furthermore, we would like to find information about the actors in a given movie. Listing 1 contains a basic version of such a document.

Notice that the document starts with three lines beginning with `.*`. The `.*` control word tells the IPF that the line is a comment. Anything after the comment control word will be ignored by the IPF compiler. Several other control words are recognized, including: `.br` (break a line of text), `.ce` (center a line of text) and `.im` (imbed text or artwork). Control words may appear almost anywhere within a document.

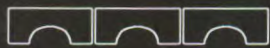
The `:color.` and `:font.` tags affect the color and style of text following them, respectively. The `fc=` attribute of the `:color.` tag sets the text foreground color; a `bc=` attribute sets the background color. Likewise, you can use the `face=` attribute of the `:font.` to specify any available font in the system. In general, the IPF compiler is not case sensitive. However, the value of the `face=` attribute is one of the few exceptions. Note also that some strings, such as "Tms Rmn", include a space. Attribute values must

be enclosed between single quotes when the value includes a space or another special character (such as a period). Finally, observe that the `:color.` and `:font.` tags do not require end tags. They set the font and color for all following text until another similar tag is used or the next heading tag appears.

Listing 1 contains several examples of the `:ul.` tag, which creates an unordered list (used when the order of items in the list is unimportant). Each item in the unordered list is indented and preceded by a bullet. A simple list (`:sl.` tag) is the same as an unordered list except that the items are not indented or preceded by a bullet. Ordered lists (`:ol.` tag) are indented and each item is preceded by a sequentially incremented number or letter. To identify a new item in the list, use the `:li.` tag. Once you've finished listing items simply close the list with an end tag (`:eul.`, `:esl.`, or `:eol.`).

The unordered list highlighted in Listing 1 contains a hypertext heading link (`reftype=hd`). The IPF cross references this against the header which uses "Casablanca" as its window identifier (`id=Casablanca`). Other hypertext links reference each movie an actor played in, the movies in a particular genre and actors cast in each movie. These three sets of hypertext links satisfy our search

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requirements for the document.

Each actor and each genre includes a primary index tag. Furthermore, each movie has a secondary index to its actors and genre. This lets us quickly find the movies each actor played in and which movies fit each genre by simply looking at the index. Note the `.isyn:` tag near the middle of Listing 1. This adds an index synonym of "Mystery" for the root index word "Suspense." Index synonyms help the user (who may not know the exact word used in index) by referencing another word with the same meaning.

Finally, the `:artwork.` tag (highlighted near the end of Listing 1) tells the IPF to include an image along with the cast and title of the movie. The `name='csblnca.bmp'` attribute defines the name of image, and the `align=center` tells the IPF to display it in the center of the window. Figure 1 shows how this particular window appears when compiled and displayed on line.

Once the text version of the document is complete, including tags, you must convert it to an ".INF" file. This step requires an IPF compiler. (Both the IBM OS/2 2.0 Developer's Toolkit and Borland C++ for OS/2 include an IPF compiler.) Assuming the

name of the document is MOVIES.IPF, it can be compiled with the following command:

**IPFC /INF MOVIES.IPF**

IPFC is the name of the IPF compiler. The /INF option tells it to create an online information file with the ".INF" extension. Assuming it compiled properly, the document may be displayed on line with the following command:

**VIEW MOVIES**

### Next Time

In the second part of this series, which will appear in the July issue of *OS/2 Professional*, I will explain how to add online help to an application. The primary focus will be on the Presentation Manager programming aspects, since the tags used and the layout of the online information are basically the same as with online documents. ♦

*Todd Crowe is an independent OS/2 software developer and the owner of Peer Intelligence based in Inver Grove Heights, Minnesota.*

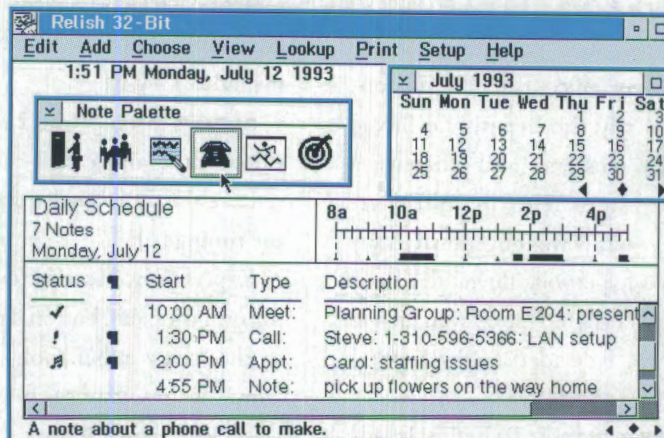
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# DO IT FOR

BY HANK KIEWER

I love to repair cars. When I needed a timing belt, I didn't want to admit the task was beyond my capabilities. So, I went to the public library and checked out a repair manual for my car. The instructions looked pretty straightforward, with steps numbered from one to 101—until I took a closer look. Steps one through 88 showed how to remove the hoses, wires and belts that obstruct access to the timing belt cover. Then my eye caught step number 89.

Step 89: Use the stress relief tool (part #17Q96Z32) to force the hyperbolic fluvial tensioner to the first detent position. Then remove the timing belt.

A stress relief tool? The illustrations, of course, did not identify the hyperbolic fluvial tensioner and whatever a stress relief tool was, certainly was not shown in any

of the drawings. I had never seen a hyperbolic fluvial tensioner and had no idea what it was. Perhaps I should have given up and taken the car to the shop. Instead, I decided to try another approach.

I called my favorite auto parts dealer and asked whether, by any chance, the timing belt I needed came with installation instructions. (I really didn't expect anything like A:>INSTALL for this task, but the thought did cross my mind.) I was pleasantly sur-

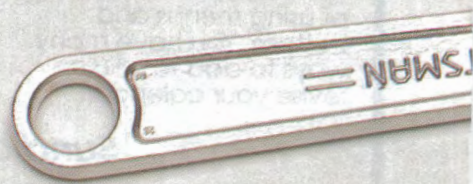
prised by his answer. He said that they had just received a new instruction machine that was supposed to demonstrate repair procedures. He didn't know much about it, but had been told that it was the latest innovation in do-it-yourself instruction. I hopped in the car and drove down to get a first-hand look at this new instructional machine.

What I found was a multimedia computer connected by a high-speed data link to a central repository of multimedia instructional material. A touch-sensitive screen allowed me to find the make and model of my car. I was shown several views of the car, and when I touched the hood on one of the images, the next view showed me the engine compartment. An icon allowed me to take a shortcut by listing probable parts for replacement. Finally, I selected the timing belt from the list. Expecting to watch a VCR-like presentation, I discovered that the system made several improvements over tape-based technology. I could stop the presentation, go back to review details, zoom in on details for a clearer picture of that odd hose connection and so forth. This was not my father's VCR!

Step-by-step I watched an experienced mechanic work through the jungle that obscured the cover to the timing belt, remove the timing belt cover and begin the process of removing the timing belt.

Expectantly, I leaned toward the screen—finger held twitching over the pause button. I didn't want to miss a look at the “stress relief tool.”

Much to my surprise, it was just a large screwdriver and a wooden block! That's what he used to pry the tensioner away





# DO-IT-YOURSELFERS

Do-it-yourself apps are money makers, and multimedia developers should examine this market without further delay.

from the belt so that it could be removed. A bit anticlimactic.

As the instructions ended, I was shown an illustrated list of suggested replacement parts, including new gaskets and hose clamps. Taking advantage of a key marketing opportunity, the system listed further candidates for replacement or preventive maintenance that became accessible during the procedure. I selected the parts I wanted to replace, inserted my credit card in the credit card reader and the computer printed an order form which I took to the parts desk. I received the parts that were in stock, placed a few others on order for next-day pickup and decided against replacing the remaining suggestions. My order was properly updated, my credit card charged for the parts I bought and I walked out with more parts than I had originally intended to buy. I bought those additional parts hoping a little preventive maintenance would keep me from wading through that jungle of wires and hoses again.

Wait. This whole scenario is actually not at an existing application, but one which I would like to see some day soon.

Back to reality. Where are we today? The repair market is flush with video tapes for the do-it-yourself crowd. But anyone who has tried using one of these tapes knows how frustrating

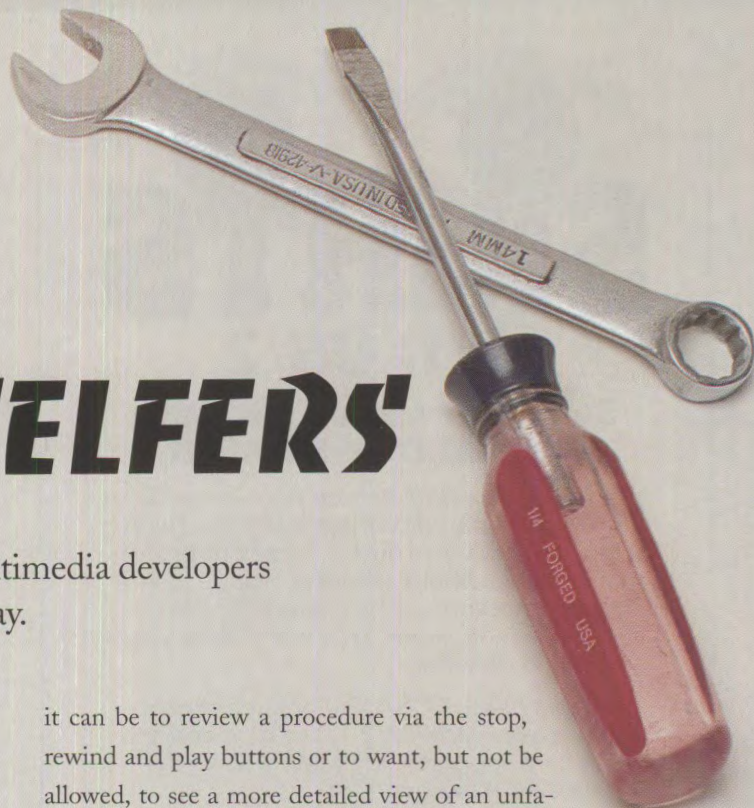
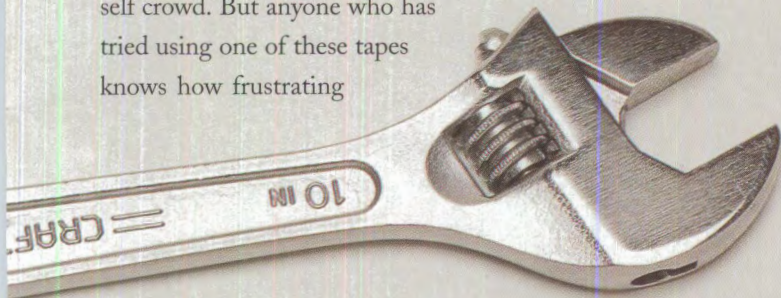
it can be to review a procedure via the stop, rewind and play buttons or to want, but not be allowed, to see a more detailed view of an unfamiliar procedure. A multimedia approach is much easier to understand and allows meaningful interaction with the do-it-yourself mechanic.

The advantages to the do-it-yourselfer are clear: descriptions of repair processes and suggestions for preventive maintenance that relate to the primary procedure. Many do-it-yourselfers are trying a particular project for the first time and need guidance. But look at the advantages to the vendor.

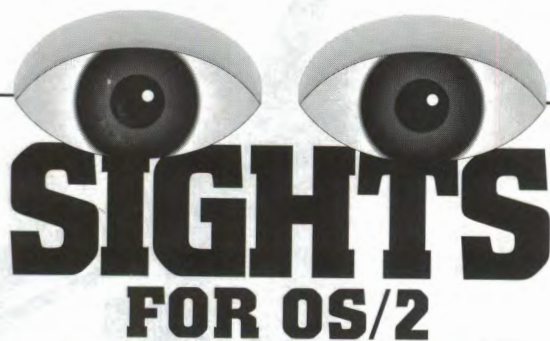
- The customer, not the parts clerk, identifies the parts needed. This can save a lot of clerical time and reduce clerical error.
- Sales are likely to be larger when customers are guided toward purchasing additional parts for preventive maintenance.
- Customers recognize the added value of expert advice in the use of a product and are likely to return again and again.
- Satisfied customers attract new customers.

This example of using multimedia for product enhancement is but one of many ways that multimedia can be integrated into kiosks.

In this information age, the challenge faced in many markets is to get the right information to the right person in a timely and appropriate manner. The vast amount of information makes this problem especially difficult. Few if any parts dealers could afford to carry enough video tapes to cover repair procedures for all makes and models of cars and all possible do-it-yourself repair projects. Even if they could, the task of storing and finding the proper tape would be enormous. For this reason multimedia applications with a central library of information connected by a high-speed data link are necessary components







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## MULTIMEDIA

of the emerging multimedia information age.

While multimedia applications have already begun to appear in the auto and aerospace industries, these systems have only just started to tap the available resources. For example, the parts departments of some auto dealers have on-screen repair manuals, but the images are simply scanned from existing paper manuals. While hardly a revolutionary application of existing technology, these CD-ROM-based systems are more convenient than greasy tomes full of ripped pages.

Contrast the maintenance of an automobile with the complexity of a jetliner. The aerospace industry has a need for large graphical libraries of drawings with appropriate repair and maintenance instructions. Keeping the library up-to-date is an enormous task no matter how it is done. When paper documents are used, it is difficult to ensure that the correct and up-to-date version is in the hands of the people who are responsible for safety and maintenance.

Reference sources for maintenance and repair have a very broad base. Home and commercial construction, equipment maintenance, appliance repair and computer repair are just a few potential targets for applications and libraries involving multimedia. And they are more than just convenient, more than just necessary by the burgeoning nature of mechanical arrays. Do-it-yourself apps are money makers, and multimedia developers should examine this market without further delay. ♦

.....  
*Contributing writer Hank Kliever is a PC and AS/400 consultant and owner of Rochester Systems Advisors, Rochester, Minnesota.*

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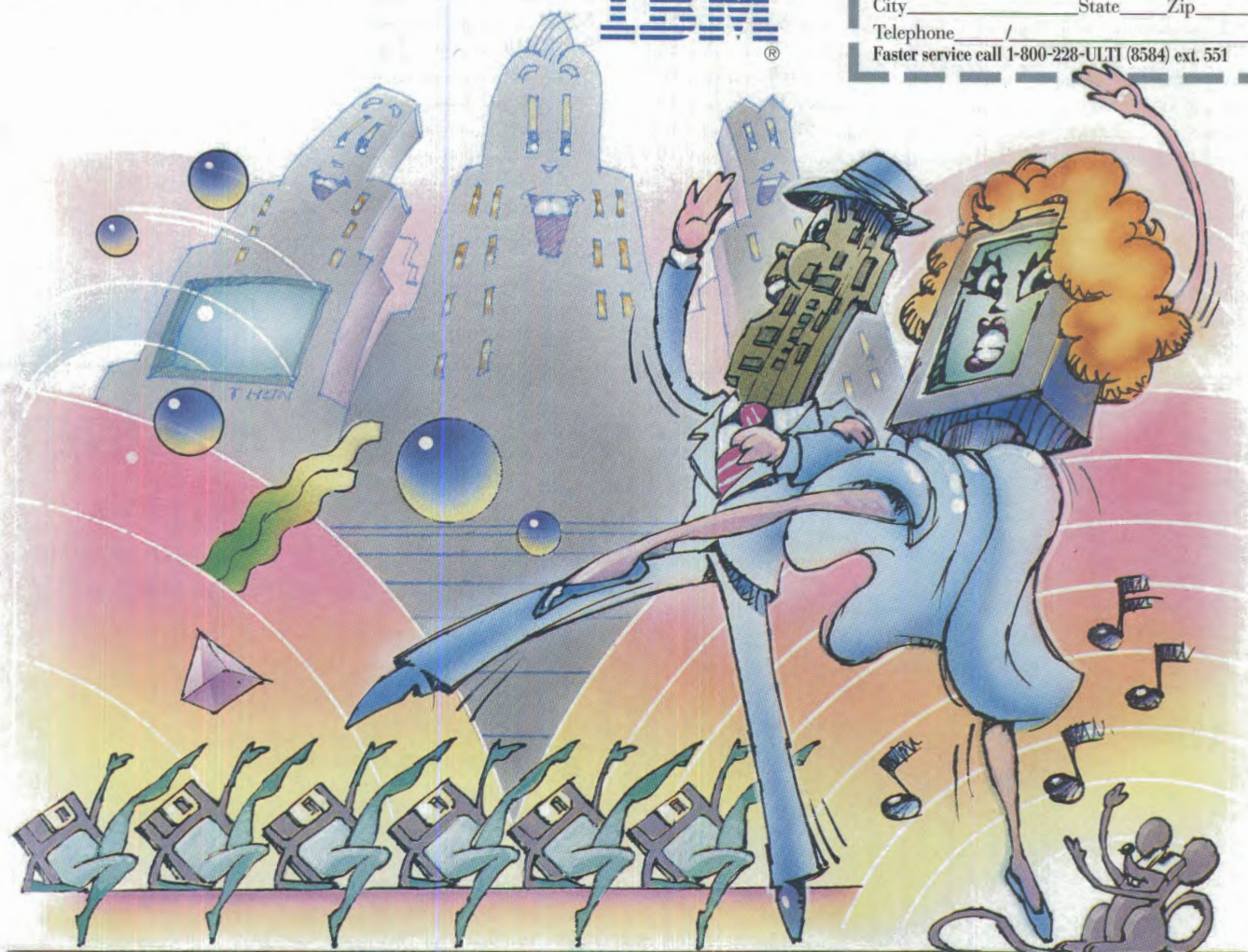
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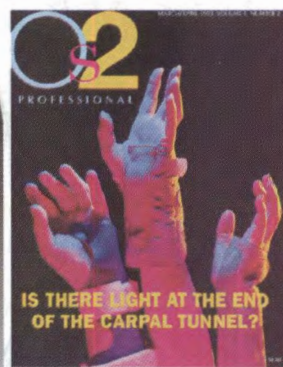
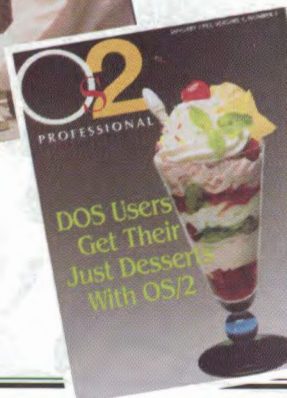
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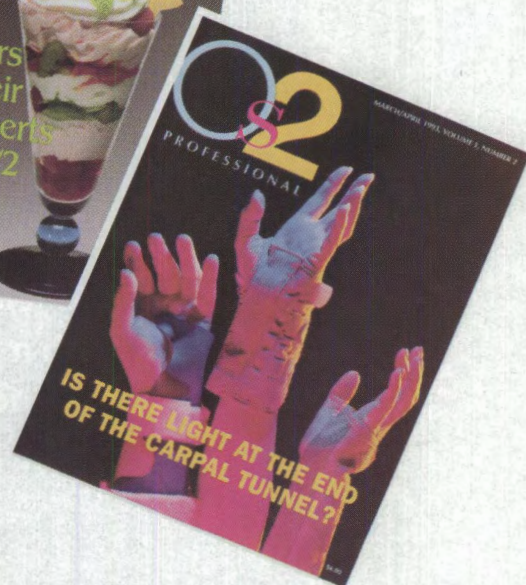
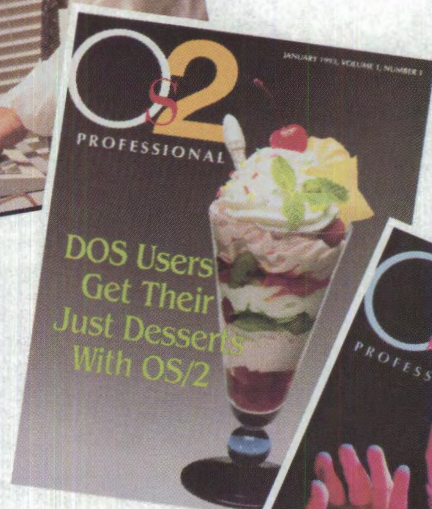
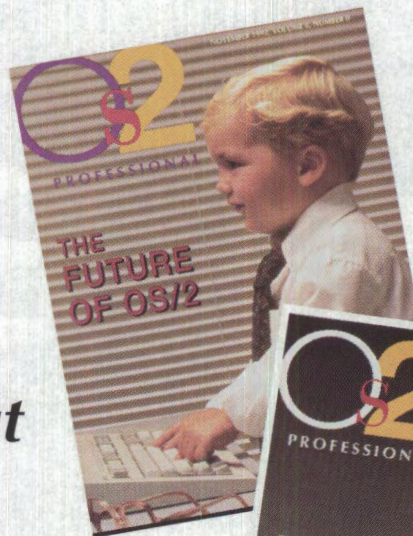
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# GIG TOO BIG?

**Files exceeding  
two gigabytes  
can mean trouble  
for OS/2 and  
a red flag  
for IBM.**

**“W**e’re dropping OS/2.” The words from the IS manager at a large financial institution dropped into the silence of the phone line. After a few seconds, he went on, “We’re not really satisfied with the limits that OS/2 places on us, especially the two-gigabyte limit on file size. So, we’re going to something else, probably UNIX.” That comment and others were to result in a flurry of activity at IBM and at user and developer locations as we worked to get the story. Is OS/2 hurting users with a file size limit of two gigabytes? If so, is there a way around the problem?

Only a few days before, another IS manager at the Traveler’s Insurance Company in Hartford gave a similar story. “We’re having problems with some of the limitations of OS/2,” said Pam Hunter. Hunter is in charge of selecting workstation and server hardware for Traveler’s. She explained that Traveler’s is continuing to improve the LAN Server network that already supports some 30 thousand workstations. Plans call for



spreading data across 70 remote database servers running OS/2 and Microsoft SQL Server, and use a UNIX-based database server (probably running Sybase) as the company's central data repository. Communications between the central database server and the remote servers would be through TCP/IP.

"We knew that we couldn't support this kind of operation using OS/2," Hunter said. She explained that OS/2's upper limit of two gigabytes for a single data file was a major concern, but not the only one. OS/2 simply wasn't scalable enough to support a database operation the size of Traveler's. The only alternative would have been to add an extra database server at each location to preserve access and redundancy. That would have been significantly more expensive—and much more difficult to manage.

### The IBM Approach

As questions about IBM's file size limit began to crop up, this reporter approached IBM corporate communications to confirm that the problem really existed, and give IBM a chance to shed any additional light on the subject. Instead, IBM launched into a flurry of activity and damage control. Marketing representatives were alerted to make inquiries as to whether any of its large OS/2 customers were dropping out. Meanwhile, IBM denied knowledge of the limit, claiming the information was "not available."

While IBM searched for its spec sheets, *OS/2 Professional* continued to ask around. We queried Mark Minasi, noted author of *Inside OS/2: Special Edition* (1993, New Riders Press), about the limit. "Another piece of bad planning," Minasi said. He added that he expects IBM to make major revisions to the OS/2 file system in the not-too-distant future. Revisions are expected to include features such as object inheritance and extended attributes. "That's how 'Cairo' is going to work," Minasi said. "Cairo" is a future extension to Windows NT under development by Microsoft. Minasi expects OS/2's two gigabyte limit to have disappeared by the time IBM implements a similar object-oriented file system. "Operating systems always get dragged along by user requirements," Minasi explained.

As it turns out, many users have long ago decided that their best interests were served by finding ways around operating system limitations. To satisfy the needs of such users, Gupta Technologies, Inc., in Menlo Park, California, quit relying on the operating system's features. According to cofounder Bruce Scott,

general manager of Gupta's database server products, the company first circumvented operating system limitations while writing an early DOS-based database server. In those days, MS-DOS had a disk size limit of only 32 megabytes.

Scott says that Gupta developed methods for spreading databases across several physical devices. In the process, the company found ways to improve performance by taking advantage of its software's ability to search multiple disk drives at the same time. "It's completely transparent to the user," notes Scott, although he adds that it does increase the complexity of database administration.

In Scott's opinion, the most serious limitations of the IBM OS/2 database are that it doesn't support unlimited field sizes and it won't span media. These were also problems for Traveler's Insurance, whose director of distributed database technologies, Dave Croweak, is wrestling with database designs for a risk-management system that is expected to exceed 25 gigabytes. Croweak solved the problem by moving to UNIX for the central database server at Traveler's, explaining, "OS/2 is just not designed for this."

Like several others, Croweak feels that OS/2's file size limit is less of an issue than some other problems in the IBM environment, including the inability of OS/2's Database Manager to span multiple drives. On the other hand, Croweak notes that it's not unusual for binary large objects (BLOBs) to exceed two gigabytes, so the limit could affect databases with BLOB support. In any case, Croweak has resolved any possible concern by moving to UNIX, where he explains that the operating system will let designers create huge partitions in nearly any format they want.

Croweak's plans for data storage will depend on a large UNIX database server as a central data storehouse, with OS/2 database servers at remote sites. The central server will use the Sybase database management system, while local servers will use Microsoft SQL Server (which is the OS/2 version of the Sybase product). The 70 OS/2 machines will communicate with the central UNIX server using TCP/IP, a protocol supported by both Sybase and SQL Server.

### Playing with the Limit

Unfortunately, there are already numerous applications, such as imaging systems, where the OS/2 two gigabyte limit can be a



## CONNECTIVITY

problem. A single 8x10 24-bit color photo scanned at 1,200 dots per inch (dpi) can consume nearly half a gigabyte. When scanned at the 2,400 dpi resolution used by some prepress equipment, it can balloon to two gigabytes. Need a photo for a two-page spread in a magazine? Depending on the size and resolution, that alone could create a file that exceeds OS/2's limits.

Fortunately, there are solutions. Robert Lindsay, a senior principal at American Management Systems, Inc., in Arlington, Virginia, has been deeply involved with a number of OS/2-based imaging products for IBM and other clients. He points to OS/2's replaceable file system as an answer. "Anyone who would be using such large files would need a custom database design," Lindsay explains, adding that such a design could include a new file system capable of handling larger files.

Lindsay notes, however, that the market is changing, and such limits could become important over time. "It will matter a lot more in five years," Lindsay says, "but by then OS/2 will have been redesigned."

One change that will help OS/2 support larger data file sizes is

the use of the Microkernel Architecture. This industry standard approach to operating system design defines how the operating system interacts with the hardware and other services. "This is one of the strengths of Microsoft NT," Lindsay explains, predicting that OS/2 will itself support the Microkernel Architecture within two years.

Mark Minasi agrees that OS/2's ability to load a new file system is a real advantage when it comes to managing ever-evolving requirements. "That's what happens when you need to handle large files on an optical disk," Minasi points out, "you just load a new file system written to support the optical disk." Such a new file system would be designed to support the requirements of the storage medium, including a larger file size limit.

### Does the Limit Matter?

If both users and developers ignore the two gigabyte file size limit because they've circumvented it in some way, does the limit matter? The answer, as you might expect, is "maybe."

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## CONNECTIVITY

cessing such vast images has been possible for some time, the fact that such processing might take days to complete has put a damper on such uses. But with the advent of the Intel 80486, and now the Pentium, mainframe-class processing is available to OS/2-based computers. As a result, OS/2 will be asked to perform jobs that were once relegated to mainframes.

As Bruce Scott observed, "Things are getting pretty large out there." While the two gigabyte file size limit of OS/2 might be perfectly adequate for most users most of the time, it's clear that the world is changing. Already some users are moving to UNIX to avoid the limitations of OS/2. How many more will move to the Microkernel-based Microsoft NT? How much longer before OS/2's HPFS becomes more of a limit than a standard? Mark Minasi expresses hope, "Something else must happen," he says. Robert Lindsay suggests that in two years the move to Microkernel will eliminate all such limits. The question is, will that be soon enough? ♦

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*Contributing writer Wayne Rash Jr. focuses on connectivity issues for OS/2 Professional.*

## FEATURE

*continued from page 43*

### Summary

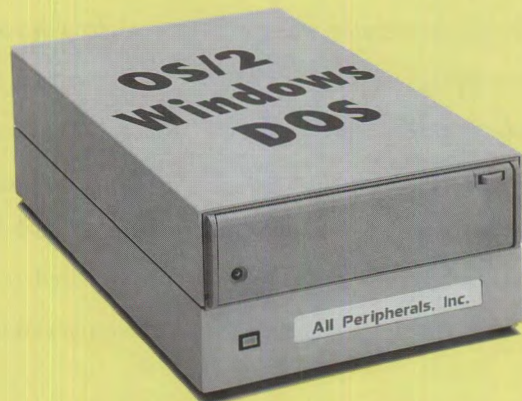
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---

*Kelley Shaddrick, CDP, is Computer Services Manager for Hutchinson Technology Incorporated.*

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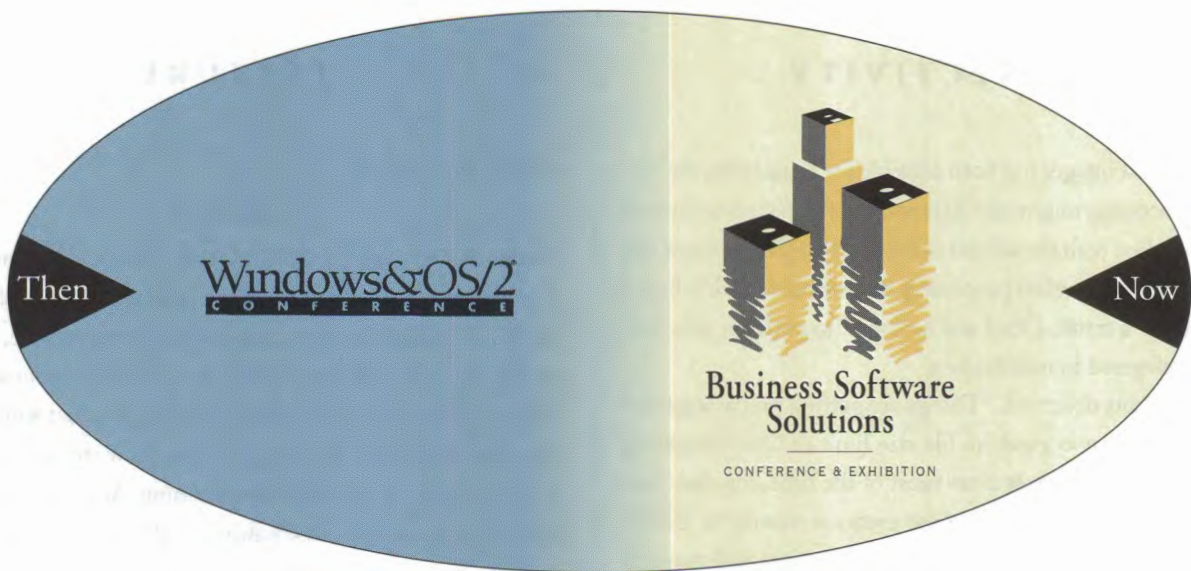
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# DATA DATES

*Seminars, Conventions, Expositions and Conferences for the OS/2 Professional*

COMPILED BY KAREN THOMAS

## MAY 24-28

### COMDEX/SPRING '93

#### Atlanta, GA

More than 75,000 people are expected to jam the Georgia World Congress Center for the annual COMDEX/Spring '93. That includes some 4,000 international delegates. More than a thousand firms will be hawking their wares and hoping to arouse your interest and wallets. Among the expected technical accents will be OS/2, UNIX, Open Systems, networking, multimedia, mobile computing and channel distribution. The event is cojoined by Windows World '93 sponsored by Microsoft.

Look for *OS/2 Professional's* Booth #405 at COMDEX!

## MAY 27

### MINNESOTA OS/2 USER GROUP

#### Minneapolis, MN

The next meeting of the Minnesota OS/2 User Group, which meets on the last Thursday evening of every month, falls on May 27. In addition to the regular sharing of tips and the latest news about OS/2, the May meeting will feature a presentation by an official from Novell. The discussion will focus on Network 4.0 for OS/2. This is sure to be an important meeting affecting many corporations' networking strategies.

Contact: The Minnesota OS/2 User Group, (612) 869-7956.

## JUNE 21-25

### OS/2 TECHNICAL INTERCHANGE

#### Toronto, Canada

Patterned after the successful Interchange held February in Phoenix, the Canadian Interchange includes such topics as: OS/2 and Object-Oriented Programming Systems, Application Development, Multimedia and Pen Computing, LAN, Distributed Systems Management, Communications Manager, DB/2, and disaster recovery. Attendees will receive a daily breakfast and lunch, a reception and banquet, complimentary software products and a chance to meet with a spectrum of developers, MIS managers and LAN systems experts. The latest software and hardware developments in OS/2 will be displayed in an extensive exhibit area. If the Canadian affair is anything like the Phoenix extravaganza, OS/2 users and developers will find the Toronto conclave an indispensable event.

Skill Dynamics, which is staging the Interchange, has set a fee of \$795US for those reserving before May 21. Since the Phoenix event was quickly sold out, IBM is urging the OS/2 community to reserve early.

*OS/2 Professional* is a leading sponsor of the Canadian Interchange and its representatives will be on hand to answer any questions about

either the magazine or OS/2.

Contact: Skill Dynamics, (800) 661-2131.

## JUNE 29-JULY 1

### PC EXPO

#### New York, NY

PC Expo has been growing in attendance since its inception in 1983. In spite of the Big Apple's oppressive heat at this time of the year, large numbers of Fortune 500 corporate buyers, interesting Manhattan parties and a friendly press office are the order of the day.

Although the premiere New York conference is an expensive show to attend and exhibit, it continues to draw larger and larger crowds each year to observe the latest and greatest in software and hardware developments. Because of the New York location, this show is where you should exhibit if you want to sell a product to the New York corporate community.

Contact: (800) 829-3976.

## JULY

### OS/2 ON TOUR

The IBM Road Show's two-day event continues all across America. Day one includes an overview and demonstration of the Workplace Shell, graphics, multitasking in general and the use of various DOS and Windows applications. The second day features a three-hour peek into the future, followed by a question-answer session.

July dates include Phoenix on July 7-8, Pittsburgh on July 14-15, Portland on July 21-22 and Riverside/San Bernadino on July 28-29.

Contact: The Right Source, (800) 766-4344.

## JULY 13-15

### COMDEX/CANADA '93

#### Toronto, Ontario

COMDEX/Canada is the largest computer conference in Canada. Among the special events at this year's COMDEX/Canada is the Channel Program, which will take a look at the Canadian channel to help distributors, resellers, VARs and integrators identify where the market is and where it's going.

COMDEX will join LANDA to produce LAN Expo '93, which promises to focus on the real networking market—offices with two or so computers to network. These smaller networking installations or work groups are particularly vulnerable because they typically don't have LAN specialists available.

COMDEX predicts that more than 20,000 distributors and corporate professionals will attend the show.

Contact: The Interface Group, (617) 449-6600. ♦

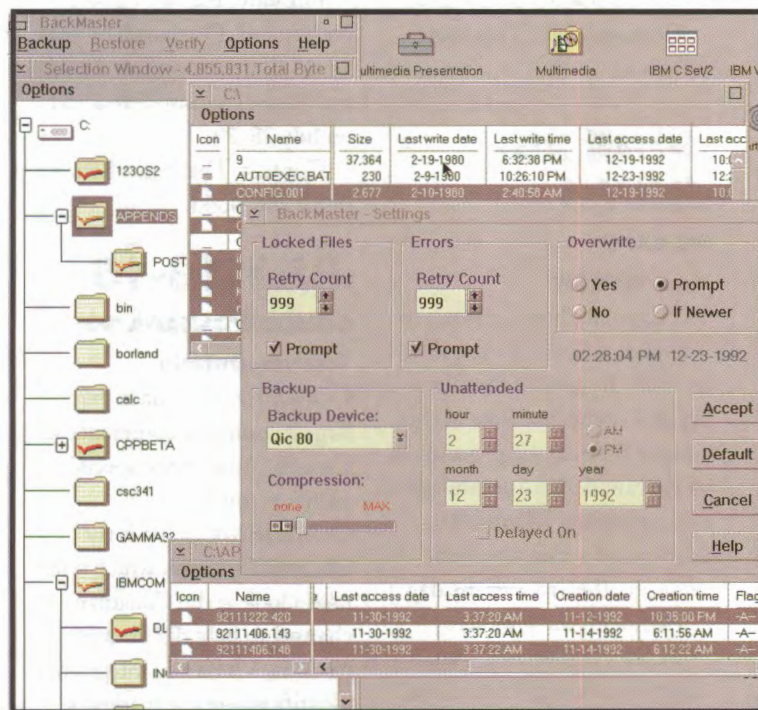
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*Send meeting & conference notices to Data Dates, OS/2 Professional, c/o International Features, 6129 Executive Blvd., Rockville MD 20852, Fax: (516) 549-7575 Compuserve: 73740,2661 MCI Mail: 310-3946.*



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## TIPS AND TECHNIQUES

BY GORDON SCOTT

**W**hen is a messy desk not a messy desk? When it uses OS/2 Work Areas.

Let me explain. If your desk is messy and you want to organize it, you can resort to collecting things into folders and filing them out of sight. If you are methodical about your folders, you can keep your work place well organized and free of clutter. Problem solved? If you're talking about a physical desktop, then maybe so.

If you're talking about a virtual desktop, such as the imaginary desktop on most people's computer screens, the problem is rarely solved this way. Organizing a messy desktop on your computer may only transform it into an organized mess—it may not be any more productive. In some cases “organizing” may even make using your computer more time consuming.

IBM built some special features into OS/2 to address this problem. OS/2 has two types of containers for helping you organize your personal computer desktop: Folders and Work Areas. Folders are a standard means of collecting or grouping any objects that you can manipulate from the Workplace Shell. Work Areas are Folders with an attitude.

The following tips and techniques cover ways you can use Work Areas and Folders to organize and improve your computing environment. The first two tips demonstrate folder creation, while the remainder of the tips are dedicated to topics regarding Work Areas.

**NOTE:** Two different methods for folder creation are outlined below; the first is the most straightforward. Keep in mind, however, that all folders are not created equal. The method you use may be either beneficial or detrimental to your intended use of the folder.

### Create a Folder from the Desktop to store shadows of related applications.

#### How to do it:

- Click mouse button two on the OS/2

System icon. (This brings up the pop-up menu for the OS/2 System folder.)

- Select the small, right-pointing arrow next to **Create another**.
- Select **Folder** on the cascade menu. (This brings up a notebook window.)
- Check to be sure that **Desktop** is selected on the notebook page.
- Select the **Create** push button.

A new folder now appears on your Desktop with the label **Folder** (to change it, hold the Alt key, hit mouse button 1 and edit the name).

#### What this buys you: organization.

A folder is very much like its office analog. It is a container which you can use to group things and thus reduce clutter. Folders like the one described above are a great place to put shadows of programs, particularly if you run several related programs at the same time.

**NOTE:** For an explanation of what a “shadow” is, and how to create one, see **TNT** in the inaugural issue of *OS/2 Professional* (Volume 0, Number 0).

This first type of folder is fine for keeping shadows of programs, but if you want to keep a collection of data files, use the next method instead.

### Create a new folder inside the Drives folder to store shadows of related data files.

#### How to do it:

- Open the Drives folder (found in your OS/2 System folder).
- Open the Drive C icon (or any other icon you have that represents a hard drive).
- Select, with mouse button two, any one of the folders in the Drive C tree view.
- Select **Create another** from the pop-up menu. (A notebook window should now appear on the screen.)
- Highlight **Drive C** on the notebook page.
- Select the **Create** push button.

The Drive C tree view now shows a new folder at the bottom of the list with the label **Folder**.

#### What this buys you: organization by actual hard drive directories.

When you create a folder from the Workplace Shell, OS/2 creates a corresponding subdirectory on your hard drive. For example, if I create a folder and label it **FILES**, then OS/2 creates a subdirectory on my C drive named `<path>\FILES`.

If you create a folder using method one, the full path and name of this corresponding subdirectory is pretty ugly (something like `C:\OS2\2_2.0_D\FILES`). This subdirectory is used by OS/2 for its own internal house-keeping. No files are stored in it. Putting data files in the Desktop directory doesn't make them any easier to find.

Therefore, it's better to use method two when creating folders for data files. When you create a new folder in the Drive C tree view, it appears in the root (just like all the other directories). When you want to copy files from this folder to a diskette, you can use the **COPY** command from an OS/2 or DOS window. It's much quicker, and the subdirectory name is easier to remember.

### Turn an empty folder into a Work Area for special projects.

#### How to do it:

- Open the **Settings** of the empty folder you have created.
- Select the **File** tab on the settings notebook.
- Select the **Work area** checkbox.
- Close the notebook.

#### What this buys you: easy takedown and setup for complex projects.

You can think of a Work Area as a smart folder. Anything that's in a Work Area is closed when the Work Area is closed. Anything that was open when the Work Area was closed is reopened when the Work Area is reopened. That's because the Work Area remembers both the state and position



## TIPS AND TECHNIQUES

of all objects—whether data files or programs—that you have placed in it.

How might a Work Area be used? Suppose that you create a shadow of your word processing program and place it in your Work Area. Suppose also that you are working on a text file in your word processing program. If you click once on the **Minimize** button of the Work Area window, not only will the Work Area minimize, but your text file in the word processing program will also minimize. (Instant clean up!) Restore the Work Area, and the text file gets restored to its previous state and position. The Work Area is easy to restore. Simply call up the Task List (Ctrl+Esc) and double click on the Work Area's name.

This function is a lot easier to use than to read about. Here's a suggestion for a sample Work Area. Give it a quick try to see for yourself how this feature of OS/2 works.

### Sample Work Area: Use a Work Area for Text and Graphics jobs.

#### How to do it:

- Create a folder from Drive C (as explained in method two).
- Change it into a Work Area (as explained in the previous tip).
- Create shadows of the Icon Editor and the System Editor and drag them into the Work Area. (You can use any word processing program or graphics program instead of these applets from your Productivity folder. I chose the OS/2 applets for this example simply because everybody has them.)
- Open the Icon Editor and modify the icon graphic somehow.
- Open the System Editor and type a few characters.
- Size and position the two windows so they fit side by side on the screen.

- Click anywhere on the Work Area window to bring it to the foreground. (If this window is hidden behind either the System Editor or Icon Editor, you can bring it to the foreground from the Task List.)
- Minimize the Work Area window. (Notice that the Icon Editor and System Editor are also minimized.)
- Restore the Work Area window by double clicking on its icon, or by selecting it from the Task List.

Notice that both applets return to the size and positions they were in when you minimized the window.

#### What this buys you: flexibility.

Imagine that you are working on a Word Processor, and you want to add a graphic. With OS/2's multitasking capability, there's no need to close the word processor. You can simply start up the graphic in another window.

Imagine that the graphic and document you are working on are rather

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## TIPS AND TECHNIQUES

complex—maybe you are even writing a book with some of your own illustrations. The project will likely take so long that you will be interrupted in the process. Suppose you get interrupted by a phone call. While on that phone call, you decide you want to work with an on-line calendar or personal information manager (or both).

Rather than take the time to close, save or even bother to move the word processor and graphic editor out of your way, you can simply minimize the Work Area window from which the two programs were started. The two programs minimize along with the Work Area, and once again you have a clear desk from which to open the new programs. When you hang up the phone, you close your calendar and information manager. Then you simply restore the Work Area from its icon or from the Task List. The programs

return to their previous state and position, and you can continue to work as if you had never been interrupted in the first place.

The real power of the Work Area concept begins to unfold when you have more than one of these Work Areas operating simultaneously. You can quickly switch between two or more groups of applications, each group having its own layout and positions. You can have so many applications on your Desktop that it appears messy; yet because you can remove them from sight with a single button click and restore them easily, your efficiency is not diminished.

Another attractive feature of the Work Area is that it remembers what you were working on whether you decide to shut down the folder or even shut down the entire system. When you turn the machine back on,

everything you were working on before the Shutdown will be restored to its previous state.

The Workplace Shell (the OS/2 Desktop) does a similar restore when the system is restarted. In fact, if you open the Settings of the Workplace Shell, and select the File tab of the settings notebook, you'll notice that the Work Area box has been selected. This is how the OS/2 Desktop (which is actually a special folder) manages to open any file you had up and running before you performed a Shutdown. ♦

*Gordon Scott writes on-line help and tutorials for IBM development tools. Send your ideas for OS/2 tips and techniques through the Internet to him at GSCOTT@STLVM22.VNET.IBM.COM. He can be reached by phone at (408) 463-4483.*



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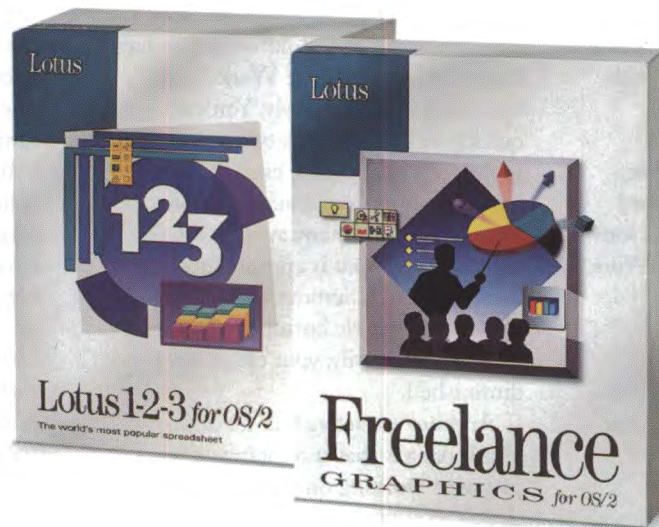
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BYTE Magazine proclaims: "[Lotus® 1-2-3

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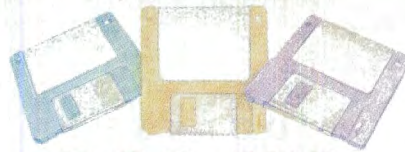
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**DOT EXE**

*Software for OS/2*

# FaxWorks Works!

REVIEWED BY HERB TYSON

It's called FaxWorks—and it does (work, that is). Anyone who ventures onto CompuServe in search of an opinion about an OS/2 fax solution quickly hears about FaxWorks. The reason is simple: FaxWorks does the job.

Less than 10 minutes after popping the FaxWorks disk into my A: drive, I had already sent out four test faxes. Operation was flawless when faxing from DeScribe, Word for Windows, XyWrite IV and from the OS/2 Enhanced Editor (EPM). It's hard to imagine a more straightforward and intuitive approach to sending computerized faxes.

FaxWorks for OS/2 has a varied, nominal history. For most of its OS/2 life, FaxWorks was known as PMFAX. Unfortunately, that put it *nom-to-nom* against FAX/PM, from Microformatic. Realizing that the confusion would do neither product any good, a new name was sought. After a brief bout with the name FaxIt, the name FaxWorks stuck.

## Installation

Installing FaxWorks is easy. Like most OS/2 programs, you simply open the INSTALL program from the A: Drive object. Then you specify a location (drive and directory) and the type of fax hardware you're using. FaxWorks works with most Class 1 and Class 2 fax modems, as well as with Intel SatisFAXtion devices.

The program has two components: a control program that you use to send, receive and manipulate faxes and a fax driver that gets installed as a printer object. Thanks to the latter driver, faxing is as simple as printing.

For the fax driver component, FaxWorks creates a printer-type object on the OS/2 desktop mapped to LPT3 (or any other port you choose). If you want to fax from a PM (Presentation Manager) application, you print to the FaxWorks printer object. To print from a non-PM application (e.g., Windows or DOS), you must use the application's own setup procedures to install support

for an IBM Proprinter X24 connected to LPT3, and then print to LPT3.

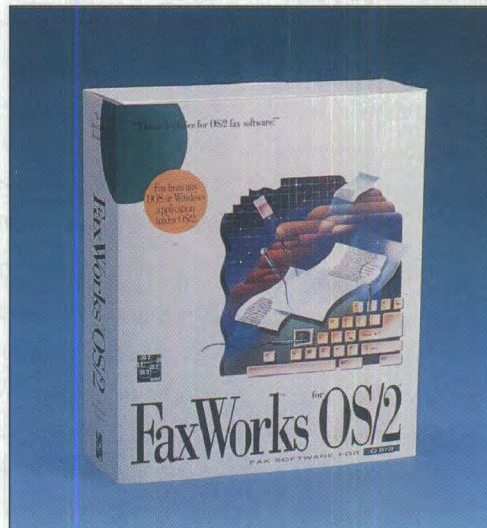
## Sending

When sending faxes from your favorite word processor, four user-suppressible tones alert you that the fax driver is active. Within a few seconds, the Send Fax dialog box pops up. From that screen, you select cover page and heading options (e.g., page numbers,

time, date and an optional message at the top of each fax page), as well as the sending instructions. Among the cover page options, FaxWorks lets you include a .BMP image as part of (or as) the cover page. You could, for example, use Windows Paintbrush to custom design a cover page, incorporating your company logo or any other information you desire. Then, save it as a .BMP file. You can also use the resources built into FaxWorks to design a personalized cover page.

The Send Fax dialog box lets you select additional send options, including the time and date (if not immediate) as well as the person(s) to whom you want to send the fax. As an extra convenience, the Send Fax dialog box also lets you include a note for your log, just in case there's something special you need to remember about this particular fax (or if you just want to include a description of the fax's contents).

When sending, you have several options. Either manually enter the name and number of the recipient or simply select an entry from the user phone book. There's also a broadcast option. For example, suppose you have a group of people to whom you send bulletins or notices. You might send tax bulletins to Judy Smith, Carol Jones and Dave Doe. Marketing memos might go to five sales offices. FaxWorks lets you assign multiple group memberships to any entry in your phone book. Then, when you select a specific group, FaxWorks broadcasts the fax to every member of





the group. For companies in the junk fax business, this feature is a real work saver. Let's hope they don't discover FaxWorks!

Once you've set all of the options (usually a 5 to 10 second process), you just click on the **Send** button. Depending on your scheduling options, the fax is sent the next time FaxWorks is started. If FaxWorks is already running, the fax is sent immediately.

In contrast to the FAXability Software that came with my Intel SatisFAXtion 400, FaxWorks includes much more useful and up-to-date information about the process. With FAXability, you start your fax and cross your fingers. Using FAXability to fax from Word for Windows within WIN-OS/2, for example, once you start the transmission, you receive no progress reports. Indeed, you must close Word for Windows and open a DOS session to examine the fax log. Only then will you find out whether or not the fax succeeded.

With FaxWorks, status information is continuously available. At no point are you left dangling, wondering what's happening. There's even a **Kill** button that lets you change your mind in mid-fax. Five minutes with FaxWorks tells you that this is a well thought out fax solution. The people who put this software together actually intended it as a useful tool rather than just something to shrink-wrap into a box with a fax modem.

## Receiving

Receiving with FaxWorks isn't quite as wonderful as sending, but it can work. The main problem is hardware, and there's only so much FaxWorks or any other fax program can do about that. About one time in 10, something in the binary clusters of received data seems to get interpreted as a stop code, bringing the incoming fax to a screeching halt. Documents sent from real fax machines to a computer-based system seem especially prone to this phenomenon. Often, just having the sender turn the document upside down is enough to change the binary composition of an image so that a fax that previously balked suddenly works fine. Until the computer fax industry develops an unambiguous way to signal that a fax is over, users will have to grapple with this problem. If the problem isn't resolved, then it's a safe bet that other frequent faxers are going to do what I did this past weekend—buy a real fax machine!

Theoretically, using the Intel SatisFAXtion 400 internal fax modem and FaxWorks, your modem can automatically differentiate voice, fax and data. Indeed, "in the laboratory" I was able to achieve perfect performance when faxing from one of my computers to another. When it came time for a real-life performance, however, it didn't work reliably. I don't doubt that it can. But cur-

rently there are too many variables and the science is too inexact. This aspect of the technology needs a bit more time in development before it can be relied upon as a useful fax-receive solution.

Used manually, you can use FaxWorks to instruct your modem to receive the current call, to wait for a single call or to wait for all incoming calls. This aspect of receiving seems to work just fine. So, if you have a dedicated fax line or if you always know when a fax is coming in, you're in good shape.

## Easy ASCII-format Phone Book and Log

One of the most convenient features of FaxWorks is that it doesn't go out of its way to make life difficult for the user. Take the phone book, for example. Aside from the basic and intelligent user interface, it's a plain, comma-separated, ASCII text file. That made it a breeze to add my own entries directly without having to manually enter them one by one through the FaxWorks menus. The only inconvenient step was converting my existing fax phone book (which seemed to be in some extraterrestrial format designed by Intel, per the DOS software that came with the Intel SatisFAXtion 400). Once I untangled that mess, formatting dozens of entries for FaxWorks' phone book took less than a minute. It's nice when programmers obey the *law of parsimony*.

## Tools, Tools, Tools

Not to be overlooked are FaxWorks' tools. Worried about sending out faxes without your signature? FaxWorks lets you paste your signature into a letter before you fax it out. I used a real fax machine to fax myself some sample signatures. Then I used FaxWorks to clip and save each signature into a separate .BMP file. Now, when I want to fax a letter from FaxWorks, I use FaxWorks tools to apply my signature, and away I go!

Did you ever receive a fax that you had to mark up and return to the sender? Just use FaxWorks' drawing and text annotation to mark it up, make comments or what have you, and then send it back. Mind you, it's not quite as easy as drawing with a pen. But if you don't have a real fax machine or a scanner, using FaxWorks' annotation facility is a lot faster than driving across town to the nearest fax service.

### FaxWorks Version 1.3 for OS/2

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## Needs Some Work

One area in which FaxWorks could stand improvement is fax modem selection. In the present setup, you select your fax modem type at installation. If you want to change modem types, you must reinstall. For most users, this isn't a problem since they have only one fax modem and probably won't be changing back and forth. However, if you do reinstall, you'll need to pay attention to the prompts that offer to overwrite existing and already-customized files—such as your phone book file. To quote Nancy Reagan, "Just say 'No!'"

More aggravating was FaxWorks' inability to use a separate directory for storing faxes. (All faxes are stored in the program directory.) Many users find it convenient and desirable to keep programs and data separate. It makes minimal backups and other system maintenance operations much easier. Unfortunately, FaxWorks doesn't provide such an option and resists the user's attempts to override the default. Even if you set the working direc-

tory of the FaxWorks program object to a different location, FaxWorks itself still will read only the program directory to find the fax files. FaxWorks lets you specify a working directory when you first install. But, that turns out to be a working directory for .BMP and .TIF files, not for the all-important (and large) .FAX files.

## The Bottom Line

As the programmer's adage states, "Every program has at least one bug," to which I might add, "and at least one problematic feature." With FaxWorks, however, finding things not to like was pretty difficult. Overall, there's much to like about and much to recommend FaxWorks. If you want to get the most out of your fax modem, then stop messing around and get FaxWorks. You won't be sorry.

.....  
*Herb Tyson is a computer industry analyst and consultant whose clients include IBM. He is the author of several books, including The 10 Minute Guide to OS/2 and the OS/2 Consultant.*

# Guild Saves Time

REVIEWED BY BARRY NANCE

If you want to design and build the Presentation Manager portion of your OS/2 software without the tedium of line-by-line programming, GUILD Products offers its GUILD development system as a time-saving aid. GUILD is something more than a screen design tool yet less than a full-blown Computer Aided Software Engineering (CASE) system. Thus, while a typical development cycle still requires manual coding, the overall programming workload is reduced. With GUILD you can specify the appearance of the windows, menus and dialog boxes within your application, then use the Resource Builder to visually place and define your screen objects where you want.

Moving beyond the realm of simple screen design, you may optionally tell GUILD (through the Resource Language) about the relationships that exist between the on-screen data objects. Finally, when you're satisfied with the layout of the screens, you (or someone else on the development team) write C code to implement the underlying algorithms that define the substance of your application. While it takes programming skills to complete the application, you don't need to be a C programmer to design the program's interface using GUILD.

Without the help of a product such as GUILD, programming CUA-compliant PM applications is a difficult chore. Typically, one person on the development team designs the screens while another person writes the code. Even if a single person handles both tasks, he or she "puts on a different hat" for each job. At design time, you don't want to get bogged down thinking about C code or resource-script entries. You simply want to specify the user interface in a way that clearly illustrates the programs final "look and feel." Furthermore, you'd like the specification to become part of the program, so the programmer can concentrate on writing the procedural part of the application in C.

## How GUILD Works

GUILD consists of a Resource Builder PM tool, both a command-line and PM resource script compiler and a conversion utility that translates Microsoft resource files into GUILD resource files. The Resource Builder is the primary GUILD module, from which you design windows, menus and dialog boxes.

By default, the Resource Builder initially displays the Dialog Editor. From here, you design dialog boxes which contain the



## DOT EXE

usual assortment of PM data manipulation mechanisms (controls): check boxes, combination list boxes, entry fields, frames, labels, list boxes, push buttons, radio buttons and scroll bars.

You place controls on the screen by selecting menu items or toolbox icons. Throughout this process the toolbox gives constant feedback on the X, Y location and size of the controls you specify. All the while, you can test your application screens by selecting the **Test** menu item in Resource Builder. If you need further assistance, GUILD's debug option (Snooper) can monitor the behavior of your screens.

In addition to the Dialog Editor, the Resource Builder provides a Window Editor and Menu Editor. All three windows—Dialog Editor, Window Editor and Menu Editor—can be open simultaneously on your desktop.

The GUILD Window Editor lets you specify several parameters for each of the windows your software will display. These parameters determine the resource ID, title, mouse cursor shape, help file and icon for each window. In addition, you may set a default color for a window and associate a primary menu, dialog box and pop-up menu with a window. If need be, the Window Editor will let you further fine tune the display by designating a default size and position for each window.

When it's time to build a menu, move into the Menu Editor. As you list the menu and submenu selections, simply place a tilde character ("~") in front of the letter that uniquely identifies the selection key. You can optionally define keyboard accelerators (such as **F2** or **Ctrl-A**) that by-pass the menu entirely and give instant access to the desired action.

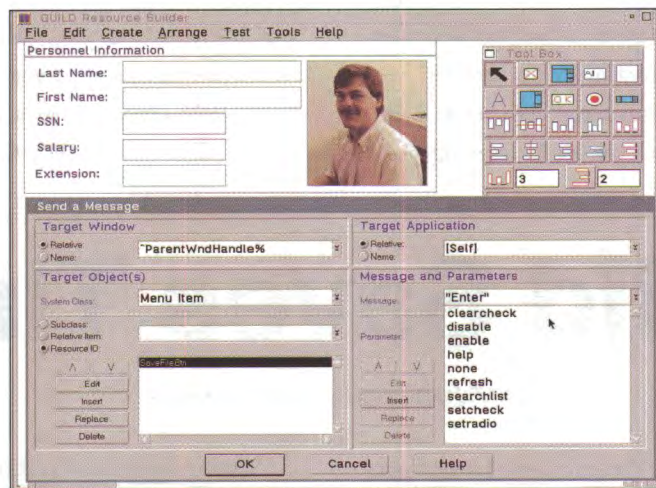
Each of the windows, menus and dialog box controls you create with GUILD is an object. As you design your application's visual interface, you may attach actions (written in the GUILD Resource Language) to each object. In object-oriented terminology, you specify a *method* for an object as you use Resource Language statements. GUILD helps you write your statements by providing lists of events and actions from which you can choose while you construct a method. The process is easier than it sounds

and certainly easier than climbing the full learning curve of object-oriented technology. For further assistance, GUILD includes a user guide and a reference manual to help you design screens and write methods.

Relationships between the objects on the screen are expressed through Resource Language statements. This ability to relate objects and perform a small amount of application processing for each is what makes GUILD more than just a screen design tool. By declaring variables associated with your screens through Resource Language statements, at run time the C program can read these variables and work with data entered on the screens.

As the visual interface designer for an application, you tell

GUILD the names of the sub-routines (C functions) that will execute after each data entry event. These events might take one of several forms, including the push of a button, the selection of a list box item or perhaps keystrokes in an entry field. The programmer's task is to write the code associated with data events. With GUILD, the development cycle is an iterative one. The designer and the programmer can add



*Designing an employee information data entry screen.*

features and functionality to an application by registering new C functions with GUILD and creating a new executable file. You create this executable by compiling the C functions with the IBM C Set/2 compiler and linking your C object code to the GUILD library. (GUILD will soon support Borland C++ for OS/2.) The final distributable application consists of the executable file, a GUILD run-time module and a resource database containing your screen definitions and Resource Language methods.

I first used GUILD and the IBM C Set/2 compiler, running on the March OS/2 2.1 beta, to write a small PM utility program. The resulting program was quite large. While GUILD is useful for writing serious, complex applications, the overhead of the library routines makes GUILD inappropriate for small utilities. You'll want to know, however, that GUILD does a good job of automating many of the screen-handling tasks that otherwise would be left to the programmer to implement. To test GUILD's suitability for medium to large-scale applications, I designed a



PM-based terminal emulator communications program over the course of several days. During this process, I found GUILD easily managed both the screen design chores and the run-time screen handling.

In addition to OS/2 2.x Presentation Manager, GUILD also

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supports Windows 3.1 and Macintosh development. Management of such cross-platform development is as simple as copying your GUILD resource files from one type of computer environment to the next. Of course, you must buy a copy of GUILD for each different environment.

But no further royalties are required for distribution of the libraries and run-time modules. Under OS/2 2.x, the run-time GUILD

module and the GUILD library routines are fully 32 bit.

GUILD isn't the tool of choice for trivial utilities or one-time data processing tasks. However, for medium to large-scale development projects—especially those in which different teams develop the visual interface and internal code—GUILD can help the screen designer provide a CUA-compliant specification to a programmer. As an added bonus, the programmer is relieved from the time-consuming job of writing resource scripts and event-processing loops.

.....  
*Barry Nance has been a programmer for the past 20 years and is the author of Using OS/2 2.0 (Que, 1992), Using OS/2 2.1 Special Edition (Que, 1993) Network Programming in C (Que, 1990), Introduction to Networking (Que, 1992), and Networking Windows for Workgroups (Wiley, 1993).*

## Borland C++ for OS/2 v1.0 and WATCOM C9.0/386

REVIEWED BY TODD CROWE

**A**s with most everything, software developers come in different shapes and sizes and with different likes and dislikes. Some prefer one language, others prefer another. Some enjoy working with compiler option switches through the command line, while others want a graphical interface to shield them from those details. Whatever your needs and wherever you fall within the spectrum of C and C++ developers, either Borland C++ for OS/2 or WATCOM C/386 should fit your needs.

For all their similarities, Borland C++ for OS/2 and WATCOM C/386 are two very different products. Both include the tools required to write most OS/2 Presentation Manager applications: a 32-bit OS/2 2.0 compiler, a debugger, a linker, OS/2 2.0 include files, an OS/2 2.0 import library and online information. But, whereas Borland provides a graphical interface to virtually all of its tools, WATCOM C/386 tools are exclusively text based. Some of the features unique to Borland C++ include online documentation for the complete OS/2 2.0 application programming interface (API), an integrated development envi-

ronment (IDE), an assembler, resource editors and a resource compiler.

WATCOM C/386 is not without distinguishing features of its own. For example, the debugger can run both full-screen and PM applications. And while Borland's C++ for OS/2 can generate only OS/2 2.0 code, WATCOM C/386 supports cross-platform development under numerous environments (including some not available with any other C compilers). Finally, Borland C++ offers a complete implementation of both ANSI C and AT&T version 3.0 C++. WATCOM C/386 v9.0 does not support C++, a feature that will appear in version 9.5, which should be shipping as this issue goes to press.

### Compiler Features

In a graphical environment such as the OS/2 2.0 Workplace Shell, the compiler is less important a tool than in text-based environments. Why? Because the compiler plays a much smaller role in the development process. A GUI environment requires many important development tools in addition to the compiler. Even so, there are occasions when the right compiler is critical. Borland



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C++ for OS/2 and WATCOM C/386 represent both ends of the utility/performance spectrum.

The majority of OS/2 C and C++ developers will find Borland C++ for OS/2 satisfies their needs. It is ill-suited, however, to developers with special requirements such as cross-platform development. Some of the important features of the Borland C++ compiler are its optimizations, fastcall calling convention, precompiled headers and C++ support. But Borland C++ has its limitations as well. It can only generate 32-bit OS/2 2.0 code, and thus cannot compile DOS applications or programs for other Intel-based environments. And while Borland C++ supports thunking to and from 16-bit code, it cannot generate 16-bit code. Borland has focused special attention on optimization features. Each optimization may be enabled or disabled separately. And the compiler supports a register-based calling convention named *fastcall* which dramatically reduces function call overhead. The fastcall calling convention is similar to—but not compatible with—the IBM C Set/2 optlink calling convention.

Compile times are reduced through Borland's support of precompiled headers. Using this feature, the headers included in the program modules are compiled into a symbol file. So long as the headers do not change—and new headers are not added—they will not be recompiled. Unfortunately the symbol files can use up a good deal of disk space. Additionally, it takes extra effort to make precompiled headers work satisfactorily on large projects composed of multiple source files.

The C++ support in Borland C++ is a full implementation of the AT&T version 3.0 specification. According to Borland, their compiler includes the first complete commercial implementation of templates. Borland does not, however, support C++ exceptions.

C++ support aside, WATCOM's C/386 compiler is far more full-featured than Borland's. Consider, for example, the wide variety of 32-bit environments supported by C/386: OS/2 2.0, 32-bit Windows, Rational Systems' DOS/4GW, Phar Lap 386/DOS-Extender, Ergo OS/386, Intel Code Builder, QNX, AutoCAD Development System (ADS) modules, Novell NetWare 386 executables and NetWare Loadable Modules (NLMs). And if that's not enough, you can purchase the WATCOM C Delta Pack to generate 16-bit applications.

As with the Borland C++ compiler, WATCOM C/386 generates optimized code, and each of the optimizations may be enabled or disabled separately. Additionally, C/386 includes an option to generate function declarations. This handy feature automatically generates function prototypes.



## DOT EXE

### Benchmark Results

Developers often consider code generation speed and quality as two of a compiler's most important properties. This is, of course, because time spent compiling is usually time spent waiting. Hence, the faster a compiler runs, the better. But compilation time and execution speed play a less prominent role in OS/2 and other multitasking, graphical environments. More often than not, GUI-based applications stand idle while waiting for user input. And multitasking helps amortize the time users spend waiting for results. Under such scenarios, a little extra performance may go unnoticed.

In order to gauge the relative performance of the Borland C++ v1.0 compiler and the WATCOM C9.0e/386 compiler, I ran a series of three common benchmarks. These benchmarks were also run against IBM C Set/2 version 1.00 (CSD level CS00044) since it is the current standard for OS/2 2.0 C compiler's. All of the benchmarks were compiled and run on an IBM PS/2 77 486DX2 (33/66MHz CPU, 16MB RAM). Execution results were calculated as an average of three runs. Compile times were computed with optimizations disabled and execution times with optimizations enabled for the fastest execution. The results are shown in Tables 1, 2 and 3. See the sidebar for descriptions of the three benchmark programs.

Not all applications are performance dependent, so a fourth "real world" application was also examined. The program: JIGSAW, a sample application enclosed with the IBM OS/2 2.0 Developer's Toolkit and Borland C++ for OS/2. See Table 4 for the results. The make files for the JIGSAW program were modified to include compiler-specific optimizations. The Compile Time measures the entire build process, including the C source compilation, resource compilation, link and online help file generation steps. The resources for the WATCOM C/386 and IBM C Set/2 versions of JIGSAW were built from tools in the IBM OS/2 2.0 Developer's Toolkit. The Borland C++ version of JIGSAW was built using the Borland resource compilers.

The WATCOM C/386 compiler stands well above the other two for producing fast code. This fits in with its emphasis on solutions for special needs. The code generated by Borland C++, on the other hand, ran very poorly with respect to the WATCOM and IBM compilers. Borland C++ did, however, compile the source code and build the JIGSAW program faster than either of the other two. The size of its executables was also smaller than IBM C Set/2 in all cases and the smallest overall for JIGSAW. Many OS/2 PM developers will appreciate Borland's small

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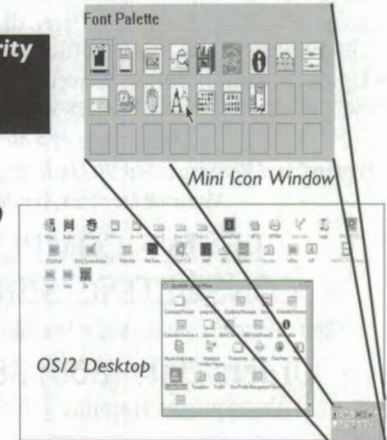
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executable sizes, even at the expense of execution speed.

### Tools and Libraries

Borland C++ for OS/2 and WATCOM C/386 both provide the standard fare of run-time libraries and add an impressive set of development tools to boot. As with their respective compilers, the tool sets are well matched to their intended audience. The few Borland C++ tools that lack a graphical user interface are easily accessible through the PM-based IDE. And, although the WATCOM C/386 tools are all text based, they seem well designed and well thought out.

Both Borland C++ and WATCOM C/386 include an extended run-time library. These have the typical C library functions plus extensions for compatibility with other compilers. Borland C++ includes a complete C++ streams library and a library of C++ container classes, but lacks a class library for PM programming. In keeping with its cross-platform support, WATCOM C/386 includes a graphics library for use with 32-bit DOS protect mode programs. Both compilers feature a complete set of OS/2 2.0 header files as well as an import library for the OS/2 2.0 APIs. You will find a similar set of headers and libraries for the Windows API in WATCOM's package.

The tool sets provided in Borland C++ and WATCOM C/386 are more impressive than the libraries. Both include a debugger, a linker, a make utility and an object librarian. Borland C++ has a very well-designed IDE, an assembler and most of the resource compilers necessary for generating OS/2 PM applications. WATCOM C/386 features a profiler plus numerous other useful utilities.

The PM-based IDE in Borland C++ for OS/2 is one of the best features of the package and is vastly superior to IBM WorkFrame/2. Application development within the IDE is oriented around projects. To generate an application, simply create or open an existing project, add the core source files (e.g., ".c", ".asm", ".rc", and so forth files) to the project, and then select **Make** from the pull-down menu. Nothing more is required. The IDE determines the source dependencies and tools required to build the application. Compiler, environment and other options may be set through the Project Settings Notebook. A macro language and compiler for the built-in editor, syntax highlighting, a tool bar for quick access to functions, an integrated debugger (in addition to Turbo Debugger GX, described below) and online, context-sensitive help are but a few of the additional (and useful) features of the Borland C++ IDE. While WATCOM C/386 does not include an IDE, it does support IBM WorkFrame/2. The support is minimal, however. Only the compiler options are accessi-



## DOT EXE

ble through the graphical interface and the make-file creation tool is not supported.

WVIDEO and Turbo Debugger GX are the respective source-level debuggers for WATCOM C/386 and Borland C++. WVIDEO is text based and is very similar to older versions of Microsoft's CodeView debugger. In spite of its archaic interface it has some very useful features. For example, it can debug single-threaded and multithreaded character-based, and, Microsoft and OS/2 PM-based applications. And, in addition to single-machine operation, it supports a separate debugging terminal connected by serial port (including a modem), parallel port or LAN. Turbo Debugger GX is a PM-based debugger which can debug single-threaded and multithreaded PM applications. The interface is very easy to learn and use. It includes many features not available with the IBM C Set/2 IPMD debugger. One of the biggest limitations of Borland C++ for OS/2, however, concerns the debuggers. Neither the IDE-integrated debugger nor Turbo Debugger GX can debug character-based applications.

### Resource Compiling

Presentation manager resources may be created with Borland's Resource Workshop for OS/2. Resource Workshop provides a project-based, integrated interface for editing and compiling PM resources. Because most resources are editable only in text format, Resource Workshop provides a script editor for this purpose. It also has a bitmap editor and a dialog editor, both of which are better than those included with the IBM OS/2 2.0 Developer's Toolkit. The most obvious feature missing from Resource Workshop is a font editor. Resource Workshop also has some minor flaws that can make it difficult to work with. For example,

Resource Workshop does not provide an easy way to change resource identifiers and their values. I had to resort to editing resource files by hand.

Many other tools are also included with Borland C++ and WATCOM C/386. Borland C++ features an OS/2 version of Turbo Assembler, an IPF compiler, a linker, an object librarian, import library utilities and a make utility.

WATCOM C/386 includes a profiler, a linker, a make utility and utilities to dump object modules and covert them between different types.

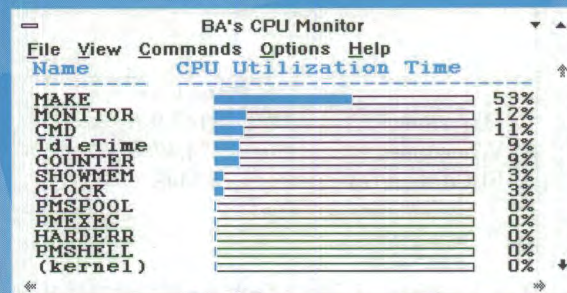
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**TABLE 1**  
Compile Times  
(Seconds)

	Borland C++ <sup>1</sup>	WATCOM C/386 <sup>2</sup>	IBM C Set/2 <sup>3</sup>
Dhrystone v2.1	2.65	4.60	7.93
Whetstone	2.17	2.16	3.37
FLOPS v1.2	2.30	2.48	4.02

**TABLE 2**  
Execution Times

	Borland C++ <sup>4</sup>	WATCOM C/386 <sup>5</sup>	IBM C Set/2 <sup>6</sup>
Dhrystone v2.1	38167.9	63694.3	49423.6
Whetstone	74.47	68.47	69.78
FLOPS v1.2	2.8448	3.3958	2.9255

**TABLE 3**  
Executable Sizes

	Borland C++ <sup>4</sup>	WATCOM C/386 <sup>5</sup>	IBM C Set/2 <sup>6</sup>
Dhrystone v2.1	35344	32256	55296
Whetstone	17424	14848	32256
FLOPS v1.2	27152	19456	34304

**TABLE 4**  
JIGSAW

	Borland C++ <sup>7</sup>	WATCOM C/386 <sup>8</sup>	IBM C Set/2 <sup>9</sup>
Compile Time (secs)	30.17	87.22	64.25
Executable Size	51226	57344	60842

<sup>1</sup>bcc -Od

<sup>2</sup>wcc386 -Od -mf

<sup>3</sup>icc

<sup>4</sup>bcc -O2 -4

<sup>5</sup>wcc386 -Oaxt -4r -s -mf

<sup>6</sup>icc -O -G4 -Gs+

<sup>7</sup>bcc -O2 -4

<sup>8</sup>wcc386 -Oaxt -s -mf

<sup>9</sup>icc -O -G4 -Gs+ -Gm+ -Ms -Se -ss

## Performance Benchmarks

The Dhrystone benchmark measures the number of Dhrystones that may be computed in one second. A Dhrystone is a set of common operations performed by most real-world applications. It includes no floating point math operations. The Dhrystone benchmark was run for 10 million iterations. The result units are in Dhrystones—the higher the number, the better.

The Whetstone benchmark measures the time required to complete a prespecified number of iterations (Whetstones).

Each iteration of the Whetstone benchmark is a series of operations commonly performed by applications, including floating point math operations. This benchmark was run for 10 thousand iterations. The execution results are the number of seconds it took to complete—a lower score indicates better performance.

FLOPS measures the approximate speed of a computer (and compiler) in FLOPS—floating point operations per second. The results of the FLOPS bench-

mark are in megaflops. The FLOPS benchmark ran 20 million iterations when compiled with the IBM C Set/2 and WATCOM C/386 compilers. It ran only one million iterations when compiled with the Borland C++ compiler. The number of iterations run is determined by the benchmark program itself and is dependent on how fast it estimates a floating point **add** operation will execute. As with Dhrystone, a higher score means better performance. ♦



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## Documentation

Both Borland C++ for OS/2 and WATCOM C/386 include several volumes of printed documentation. Borland C++'s documentation totals nearly 2,000 pages in nine volumes. WATCOM

exceeds the 2,000-page mark. Nevertheless, neither the Borland C++ nor the WATCOM C/386 printed documentation contains more than superficial information on how to write OS/2 applications.

What you don't find on paper you may discover on disk. Borland documents the complete set of OS/2 APIs through online information and help. This online support is further extended to the Borland IDE, the compiler

and C/C++ language, the libraries, Resource Workshop, Turbo Debugger and Turbo Assembler. The only OS/2-related, online

information included with WATCOM C/386 is a reference for the run-time library. Windows 3.1 SDK API and other online help is present, however.

## Summary

Both Borland C++ for OS/2 and WATCOM C/386 are sound products, suitable for developing OS/2 2.0 applications. WATCOM C/386 provides features necessary for specialized applications. But its text-based interface and incomplete set of tools for building OS/2 PM applications make it less appealing for GUI development work. Borland C++ provides all of the tools and information necessary to create OS/2 PM applications. And while it can create full-screen OS/2 2.0 applications, the lack of full-screen debugger support may preclude it as an option for some developers. Borland C++ for OS/2's easy-to-use interface and fast compile times make it well suited for the typical OS/2 2.0 developer. ♦

*Todd Crowe is an independent OS/2 software developer and the owner of Peer Intelligence based in Inver Grove Heights, Minnesota.*

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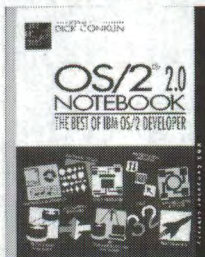
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## BOOKSTAX

# The OS/2 2.0 Handbook

by William H. Zack • Van Nostrand Reinhold, \$34.95

REVIEWED BY ALAN JAY WEINER

I came across *The OS/2 2.0 Handbook* by Will Zack in a rather unusual manner: as a door prize at a local computer club meeting. Being busy, I put it into my "to be read eventually" pile. I'm sorry I did! It should be within fingertip reach of anyone working with OS/2 and required reading for anyone using OS/2. Indeed, IBM would do well to include a copy in every package of OS/2 (as an adjunct to its skimpy manual).

Do you get the idea that I like *The OS/2 2.0 Handbook*? I do—and with good reason. Zack packs the handbook full of useful information, ranging from tips on installing OS/2, to configuring program setups, to Workplace Shell topics, to system architecture, to performance tuning, to on and on.

The book covers beginners' aspects, without boring the technical reader, and eases into technical aspects with introductory material. Certainly a rank beginner will still need help and an experienced OS/2 user will skip sections, but neither will feel slighted. Both will find *The OS/2 2.0 Handbook* a valuable addition to their library.

Organized as four major parts with several chapters in each part, there are frequent references to other chapters for more thorough coverage of a given topic. I found this cross referencing quite helpful. Using the index, on the other hand, was frequently frustrating because it used long lists of page numbers. The index really needs some additional subtopics to provide better guidance to the reader. The index does seem thorough. I rarely looked for a topic without finding it.

Each chapter is organized as many sections, with smaller sub-sections within; each with useful headings. These headings made it easy to skim through the chapters, skipping sections that contained familiar information. When I reached unfamiliar topics the headings practically jumped out to grab my attention. Most sub-sections are less than a page in length, thus breaking material into small, digestible chunks that prevent a topic from becoming overwhelming. Often, I'd realize that I was reading several pages of new stuff just because it was interesting and I'd wandered into it.

For some reason, all OS/2 books seem to start with a "beginnings of OS/2" chapter. Zack does too, although fortunately it's covered quickly. He leads right into chapters on installing OS/2, including several pages of tips and potential pitfalls. Additional tips and hints appear several times throughout the handbook. They appear to be collected from various on-line bulletin boards (e.g., CompuServe) and provide descriptions and resolutions to common problems.

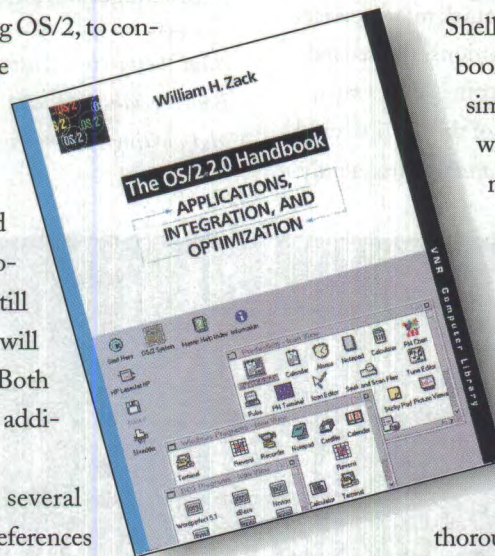
The remainder of part one covers the Workplace Shell. This section alone is worth the price of the book. Although some of the explanation is too simplistic (is there really someone using OS/2 who doesn't know what a mouse pointer is?), the majority of this 113-page chapter provides a detailed description of the Workplace Shell and how to use the Settings Notebook.

Part two provides an introduction to the inner workings of OS/2. For the novice, it starts with a brief overview of the processor architecture. Descriptions of the system commands appear throughout this section. Additionally, Zack provides

thorough comparisons between OS/2's internal version of DOS and DOS 5.0, and Windows 3.0 and WIN-OS/2. He includes many more tips and hints here, too.

OS/2 provides a baffling array of tunable parameters. The gibberish you've seen in CONFIG.SYS, AUTOEXEC.BAT and the DOS and Windows settings is all explained in detail. Once again, Zack provides a section that will make his book a primary reference source while you work with OS/2.

As thorough as the first parts are, however, the handbook is not without flaws. For example, part three covers application set-up, performance optimization and networks. Zack includes page after page of programs, and how to configure OS/2 to work with them. While this is all very useful, Zack fails to include version numbers for each application. For example, do the settings supplied for Word for Windows pertain to version 1.0 or 2.0? This is my strongest complaint about the book. Software changes





## BOOKSTAX

rapidly enough that the settings could quickly become outdated.

Any discussion of networking can become a monstrous subject worthy of a book in itself. And Zack acknowledges that he provides but a modest introduction to the topic of OS/2 networking. Two examples are supplied: mainframe access via 3270 terminal emulation and workstation access to a Novell Netware LAN. While these examples serve as a good introduction to OS/2 networks, I was left wondering where to go next (a familiar feeling to anyone dealing with networks). A few references to other sources of information would have been helpful.

Zack concludes *The OS/2 Handbook* with a quick reference to the commands available through the DOS and OS/2 command lines and within CONFIG.SYS. The content comes directly from the on-line manuals, with a bit of simplification. I found this most useful for locating unfamiliar commands or switches. I could then turn to on-line help for further details. Zack's quick reference lists only the command syntax and the switch definitions, so a secondary source of details (such as on-line help) becomes a necessity.

While it's not complete—no compendium of this nature could be—I found myself referring to *The OS/2 Handbook* frequently.

Often, I'd start by looking for one topic and drift off to other areas, learning new tidbits. For example, did you know that there are three ways to select groups of objects? I only knew two of them. While you may not need to know every method, I sometimes discover I was using an inconvenient technique just because it was the one I knew. Scanning through the headings in the Workplace Shell chapter I found several topics that were of immediate interest or clarified some of my fuzzy thinking.

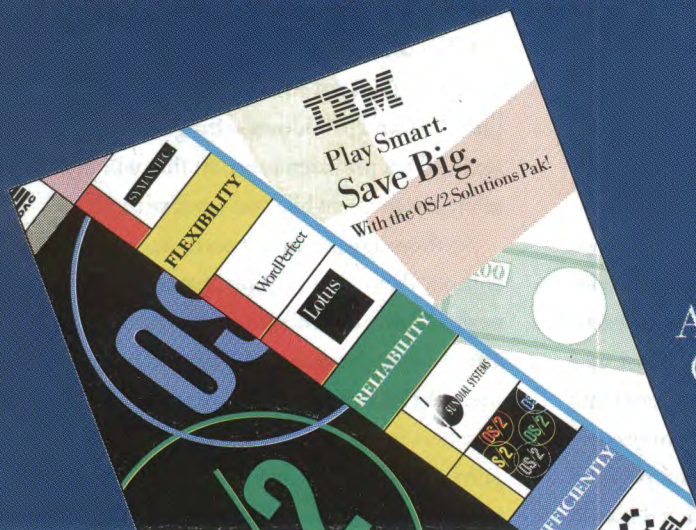
One disadvantage to a work of this nature is that some information will become dated as new versions of OS/2 arrive (for example, the impending release of OS/2 2.1 or future Corrective Service Diskettes). Nevertheless, Zack provides enough general information that *The OS/2 2.0 Handbook* should have a long and happy life on your bookshelf.

In summary: Darn good book. Buy it! ♦

---

*Alan Weiner is a consulting engineer at Communica, Inc., located in Bourne, Massachusetts. He has been twiddling bits since the late '60s and writing system-level software since the days of the 8080.*

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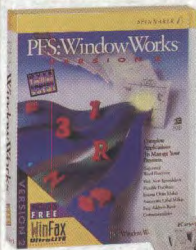
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# "Frankly my dear..."

Everyone's heard of the Big Apple—but how much do you know about the Big Peach?

BY SUSAN V. LEVINE

**Y**ou won't find any hoop-skirted belles sipping mint juleps in today's post-bellum Atlanta. Those days are *Gone with the Wind* and Atlanta is now the transportation hub of the Southeast, boasting a metropolitan population of just under three million. However, while Atlanta's rapidly growing international business community is turning the city into the business center of the Southeast, Atlanta still retains much of its old-fashioned charm, elegance and hospitality. That's why you can have an excellent time in Atlanta, even if your wanderings are restricted by a tight COMDEX schedule. Here are some quick suggestions.

From COMDEX, at the Georgia World Congress Center, it's only a short walk to the **CNN Center**, global headquarters of Turner Broadcasting System Inc. Take a studio tour of CNN and Headline News and actually watch the news as it's delivered to a worldwide audience. Food's no problem, the Center offers quite a few reasonable restaurants and fast food eateries. Sports fans can stop in at the **Braves Clubhouse Store** and movie mavens can check out **The Turner Store** stocked with such MGM memorabilia as a replica of Dorothy's ("I don't think we're in Kansas anymore") red shoes, along with contemporary offerings such as Scarlett's ("As God is my witness") Chocolates. From here you can hoof it or take MARTA, the city's rapid rail system to **Underground Atlanta**.

Underground Atlanta is historical charm and universal kitsch. There are more than 100 shops focusing on the fun and the practical—along with food places of every ethnicity (my favorite take out is **Teriyaki Temple's** California roll). If you're an Olympics buff looking forward to the 1996 Summer Games, check out



**The Olympic Experience**, a gift shop and collector's corner. Looking for some nightlife? Head to **Kenny's Alley** for live entertainment and restaurants. Underground is always lively, don't go for quiet time.

Adjacent to Underground is **The World of Coca-Cola**, a one-of-a-kind museum bubbling with artifacts on the history and popularity of the fizzy brown drink. Visit the soda fountains of the past and future, take in a film featuring the "best" Coke commercials or shop for any kind of Coca-Cola merchandise you can imagine at the Trademart store.





"Gone With the Wind" image used courtesy of Turner Entertainment Co. ©1967 Metro-Goldwyn-Mayer. All rights reserved.

A five-minute stroll from the Underground is a magnificent indoor urban environment, **Peachtree Center**. Designed by architect John Portman, the Center is a people place, home to over 50 shops, restaurants, art galleries as well as personal and business services. Stroll along walkways punctuated with flowers and fountains or relax in the light- and plant-filled atrium (a Portman hallmark).

Serious eating downtown can go in a couple of directions. In the mood to sample blackeyed peas, okra and other staples of Southern cuisine? Some of the flavor of the traditional old South,

albeit a bit forced, can be found at **Pittypat's Porch** (Mint juleps served here). But if you're more the continental type try **City Grill's** gracious and spacious atmosphere served up with '30s panache and a contemporary menu. Or, keep an eye out for a **Barker's** mobile hot dog cart (get 'em loaded, they're guaranteed the best dogs around!).

### Following Peachtree Street

All of the above assumes you're tethered to downtown. If you're mobile, follow Peachtree Street northward and you'll begin to see



## WANDERLUST

the Atlanta locals enjoy. Heading north there are cultural landmarks such as the **High Museum of Art**, a spirited contemporary building filled with African, European and American 20th century painting and sculpture and decorative arts and photography. This museum is worth the trip for the building alone. Clean crystal light and dramatic vistas enhance the entire collection, making your viewing time extremely pleasurable.

A bit farther north and just to the east of Peachtree is the fabulous **Atlanta History Center** with 32 acres of lush green grounds made for strolling and thoughtful conversation. Inside McElreath Hall you'll see exhibits documenting the Civil War and Atlanta since 1865. Down a nature path is the rustic Tullie Smith Farm, a working example of an 1840s farm. Nearby is the Swan House, a 1920s Jay Gatsby-esque mansion recalling another more mannered and elegant era.

Adore browsing in a good bookstore? The best and biggest in the Southeast is **Oxford Bookstore** with three branches (open late every night) carrying more than 140,000 titles. There's a cafe at the Peachtree Street location. Across the parking lot is Oxford Too, with over 85,000 titles of remainder, used, rare and collectible books.

As you're driving north on Peachtree, take a left at West Wesley Road and allow yourself to meander through the neighborhoods. Atlanta is known for its beautiful residential areas and in this older section of Atlanta, called Buckhead, you'll see everyone's notion of the classic "Southern" mansion set amid extraordinary gardens. Atlantans are justifiably proud of their beautiful landscapes and May is an excellent time for showing off.

Just a few blocks farther north, and you're at the crossroads of some of the best shopping in the Southeast. **Lenox Mall** and **Phipps Plaza** offer every store you and your credit cards could lust after.

### Eating Local

A word about restaurants in Atlanta—in the past decade the Atlanta restaurant scene has transformed itself from "one menu predictability" to a round-the-world culinary explosion. Just name the ethnicity and style. It can now be found in Atlanta—from tra-

ditional French to "all American" and fusion (if you're curious try **Azalea** or **Nickiemoto's**).

Some personal favorites: For the absolute tip top (both in menu and price!) you can't beat **The Dining Room** at the Ritz-Carlton Buckhead. Chef Günter Seeger has made The Dining Room an award winner almost from the moment it opened. The setting is

to the nth in cool elegance and sophistication. **Pano's and Paul's** (more American than French) and **103 West** (more French than American) both offer polished elegance in their ambiance and food. **Bone's Restaurant** is a steak and fish lovers paradise as well as a long-time media favorite. I'm told they now serve Grits fritters! The **Buckhead Diner**, a very hip updated version of

yesterday's chrome and neon diner, serves trendy fun food—love the atmosphere. **The Peachtree Café**, a neighborhood eatery within a thriving city, serves some of the best burgers on the East Coast.

If you only crave sweets and espresso, head to **Café Intermezzo** or **The Dessert Place**, they're close together, you could sample both in one night. If you'd like to burn off some of those sweet calories head to **Pat Hurley's Backyard**. Patrons can relax outside on the deck or head inside for dancing and Velcro jumping (Wednesday and Thursday only).

### Slightly off the Beaten Path

As long as you're nosing around, do yourself a favor and head east off Peachtree to the Virginia Highlands and the Little Five Points area. This gentrified section of town is rich in restored bungalows, small local shops and great neighborhood restaurants. For example, at **Camille's** you can loosen your tie, lean back and enjoy the friendly and noisy bustle at one of Atlanta's best trattoria. Their fried calamari is the tastiest this side of San Francisco and don't skimp on the pungent red dipping sauce.

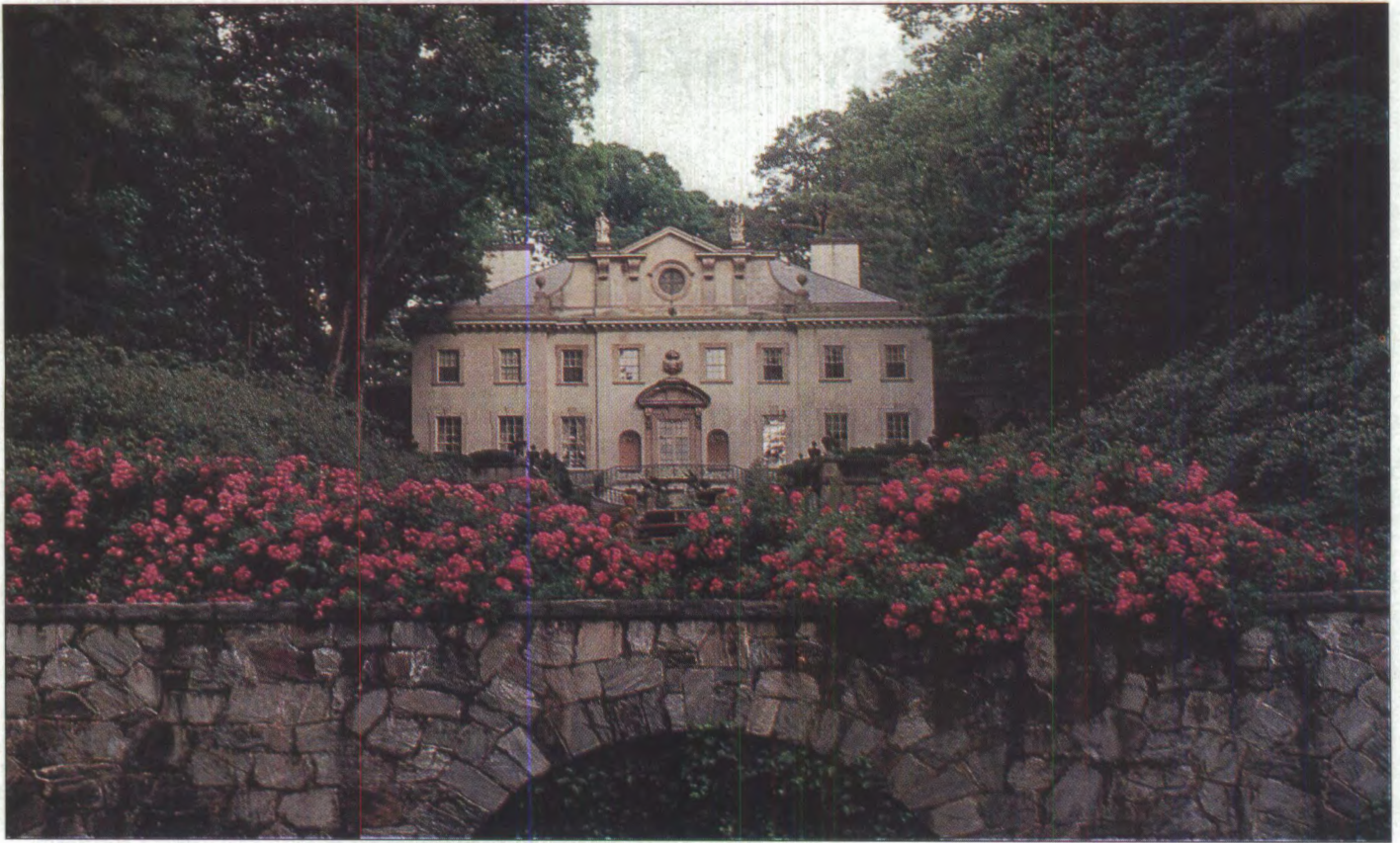
**R.J.'s Uptown Kitchen & Wine Bar** proffers a cool and relaxed sophistication and an eclectic menu. Whether seated on the patio or inside, you can sample any of their 50 wine selections available by the glass. You can even arrange a mini-wine tasting at your table. **Capos Café** is an established neighborhood restaurant with



The entrance to Underground Atlanta. Photo: Courtesy Underground Atlanta.



## WANDERLUST



The Swan House at the Atlanta History Center. Photo: Courtesy of the Atlanta History Center.

a comfortable romantic atmosphere serving unpretentiously delicious fare. Two other favorites are: **Indigo Coastal Grill** which offers a seafood menu covering the East Coast in a Key West setting and **Atkins Park**, a late night gathering spot nonpareil as well as the oldest continuously licensed bar in Atlanta.

The Highlands area is also home to some great antique shops and funky specialty shops. For great gift shopping, check out **20th Century Antiques**. It's filled to the roof with clever and whimsical *objets* and one-of-a-kind jewelry.

There is lots of night-time entertainment in this part of town too. My favorites include **Just Jazz** for impressive local and international jazz. Check out **Jo-Hanna's Upstairs**. The entertainment repertoire changes frequently from vaudeville, improvisational comedy, jazz acts to torch singers and audience participatory theater.

### Children's Activities

Did you bring the kids? Take them to **Zoo Atlanta** and the **Atlanta Cyclorama**, both in Grant Park. The cyclorama is a gigantic painting-in-the-round of the Battle of Atlanta during the Civil War, complete with music and narration. Zoo Atlanta

was quite recently updated. In a park-like setting you can view more than 250 different species of animals, many in state-of-the-art natural habitats.

**SciTrek**, Atlanta's Science and Technology Museum, is for children of all ages. It's loaded with hands-on exhibits demonstrating scientific principles that relate to daily life.

### Miscellaneous

A special note to our publisher who enjoys sending thank you's—the best florist for creating highly individual gorgeous bouquets is **Marvin Gardens**.

Be forewarned: Atlanta is not a taxi city. You can easily get around, but you have to plan it out first. Catching a taxi on the street can take effort.

A last reminder...talking "Southern" is contagious. It will only take a weekend before you're beginning all sentences with "y'all" and ending every sentence with a question mark? It's insidious—better check your laptop too? ♦

---

*Susan V. Levine is the Assistant Art Director for OS/2 Professional. After moving nine times in eleven years, including twice to Atlanta, she finally settled in Rockville.*



# Why Can't I Buy Any OS/2 Applications?

**H**ow often have you heard the question, "Why Can't I Buy Any OS/2 Applications?" More accurately, the question should really be, "Why can't I go to my local software store and find OS/2 applications?"

The answer is easy, the solution more difficult. To grasp the problem, you must understand that since OS/2's earliest days, it has been a tool for providing solutions to the corporate world. The first two million copies of OS/2 are used primarily with internally developed mission-critical applications.

Hundreds of OS/2 tools are available for the corporate developer. However, corporations typically purchase their development tools directly from the manufacturer, not through the retail channel.

Now, however, the OS/2 market is not limited to development tools. End-user applications are available. So why is it so difficult to find them, or, for that matter, even discover that they exist? DeScribe has been available since September 1989, but until recently, you could count on one hand the number of stores that actually stocked it on the shelf.

Retail stores are driven by three things: SALES, SALES and SALES! Unless you have the clout of a Lotus or WordPerfect or Borland to force your products onto the shelf, there is virtually no chance of getting the time of day from the retailers. Besides, the big guys have the marketing money to push their products in advertising and promotional deals that are very attractive to the retailers.

IBM has more clout than most companies. Nevertheless, in most retail outlets you'll have to go on a treasure hunt just to find the OS/2 box. Personal experiences have shown that anyone other than the store manager would have just as hard a time finding it. And, even if you were successful in finding OS/2, the salesperson would probably try to talk you out of it and into Windows. That way he can convince you to buy some of those hundreds of Windows applications that are cramming his shelves.

Microsoft did a stellar job of marketing Windows. It did

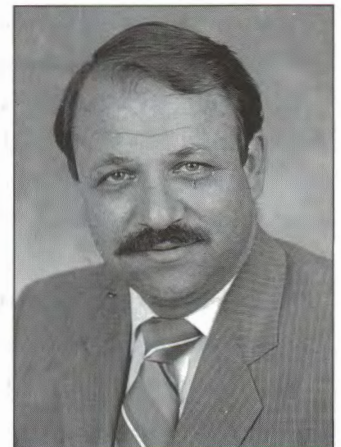
everything right in working with the developers, the OEMs, the channels, the press and the end users. On the other hand, prior to the last 12 months, there was little or no concern within IBM for selling outside the corporate environment. It seems, no one at IBM "owned" OS/2. No one lived, breathed and survived based on the ability of OS/2 to be successful as a commodity product.

Maybe that has changed. More and more people within IBM have been given responsibility for OS/2. Large numbers of IBM employees and non-IBM OS/2 enthusiasts are dedicating many hours—mostly their own time—to the advancement of OS/2. Specialists are being assigned within the traditional IBM mainframe and minicomputer marketing and technical groups in the field. IBM continues to put together new marketing programs to invigorate OS/2 sales.

Will this change the way OS/2 is accepted in the retail channels? It's hard to say. Some stores are starting to carry OS/2 and a few applications. A few stores, such as The Corner Store in Litchfield, Connecticut, and Indelible Blue in Raleigh, North Carolina, actually specialize in OS/2 and OS/2 applications. There are even a few Egghead stores in locales such as Wall Street in New York City and Atlanta, Georgia, that are bold enough to buck the trend and start carrying OS/2 products.

Can IBM pull this off and turn the momentum in its favor? Will all this change your ability to buy OS/2 applications? I certainly hope so. It is critical to many of us, users and developers alike. ♦

*Allan Katzen  
President  
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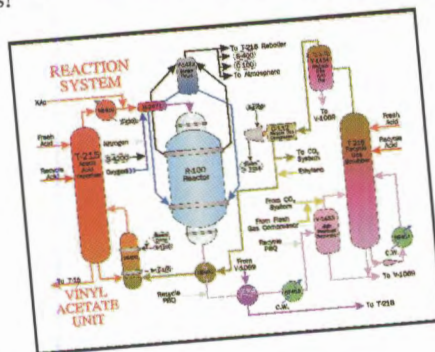
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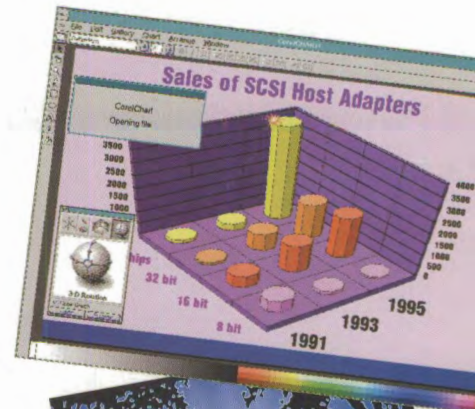
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